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THE UNIVERSITY OF ALBERTA

A COMPARATIVE STUDY OF INDIVIDUALIZED
AND GROUP METHODS
OF TEACHING SPELLING

by

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A THESIS

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "A Comparative Study of Individualized and Group Methods of Teaching Spelling" submitted by Kenneth Donald Nixon in partial fulfilment of the requirements for the degree of Master of Education.

ABSTRACT OF THESIS

The purpose of this experimental study was to adapt the individualized spelling method to the learning of spelling at the grade four level and to compare the results with a control group taught by conventional methods. Data were gathered by the experimenter from tests administered before and after the experiment.

All pupils of the experimental group and the control group were given tests in intelligence, spelling achievement, and paragraph spelling at the beginning of the experiment. On the basis of these test scores, seventy pairs of pupils of the two groups were matched according to sex, chronological age, intelligence, spelling achievement, and paragraph spelling. An analysis of variance indicated no significant difference between the two groups before the experiment. At the end of the experiment tests in spelling achievement and paragraph spelling were administered to both groups.

The teachers of the two groups were matched according to sex, years of training, and chronological age.

In this study the pupils of the experimental group learned spelling by the individualized spelling method. Each pupil recorded his personal spelling errors gathered from basic spelling lists and daily assignments, and attacked these words on a strictly individual basis under the guidance of his teacher.

The pupils of the control group learned spelling by the traditional one group method, whereby all the pupils studied common lists of words from an authorized spelling workbook.

Analysis of covariance was applied to the spelling scores used as a measure of growth in spelling. Although the findings indicated no

significant difference between the two groups in paragraph spelling and in a repeated spelling list, the results of an unfamiliar spelling list favored the pupils of the experimental group significantly.

A two-way analysis of variance followed by Tukey's gap test was applied to spelling improvement scores of the three intellectual levels of the experimental group. The results indicated significant differences favoring the high and average groups as compared with the low group, but no significant difference between the high and average groups.

A two-way analysis of variance followed by a 't' test was applied to the spelling improvement scores of two groups, the boys and the girls of the experimental group. No significant difference was noted in paragraph spelling. In the spelling list there was a significant difference favoring the girls.

This experiment has given some indication as to what principals and teachers might do to make their spelling programs more functional. To provide for the spelling needs of individual pupils, grouping of children within a class appears to be just as necessary as in the case of reading. Within these groups a variety of teaching methods is recommended. For a successful spelling program the overall program needs to be generated by enthusiasm of both the teachers and the pupils.

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TABLE OF CONTENTS

CHAPTER	PAGE
I. THE PROBLEM	1
Statement of the Problem	1
Definition of Terms Used	2
Hypotheses	4
The Experimental Design	5
Limitations of the Study	5
Significance of the Study	7
II. REVIEW OF RELATED LITERATURE	8
General Problems in the Field of Spelling	8
Selection of Words	10
Methods of Teaching Spelling	12
Individualized Instruction	16
Summary	19
III. RESEARCH DESIGN	22
Selection of Sample	22
Pupil Sample	22
Teacher Sample	23
Testing Instruments	23
Otis Beta Test of Mental Ability	24
Buckingham Extension of the Ayres	
Spelling Scale	25
Informal Spelling Test	26
Procedure	27
Testing Program	27

CHAPTER	PAGE
Teaching Procedure for the	
Experimental Group	27
Inservice Training for Teachers	31
Teaching Procedure for the Control Group	33
Treatment of Data	33
IV. ANALYSIS OF DATA AND SUMMARY OF FINDINGS	36
Comparison of the Two Groups for Equivalence	36
Comparison of the Experimental and the Control	
Groups in Spelling	38
Comparison of the Three Levels in the Experimental	
Group in Spelling Improvement	40
Comparison of the Boys and the Girls of the	
Experimental Group in Spelling Improvement	44
Summary of Findings	46
V. FINDINGS, CONCLUSIONS AND IMPLICATIONS	48
Findings and Conclusions	48
Hypothesis I	48
Hypothesis II	49
Hypothesis III	51
Limitations of the Study	52
Implications	53
Recommendations for Further Research	54

CHAPTER	PAGE
BIBLIOGRAPHY	56
APPENDIX A. TESTS USED IN THIS STUDY	62
APPENDIX B. MATERIALS USED BY EXPERIMENTAL GROUP	66

LIST OF TABLES

TABLE		PAGE
I.	Number of Pupils in Each Class Level in the Control Group and in the Experimental Group . .	22
II.	Significance of Differences Between the Experimental Group and the Control Group for Four Variables	37
III.	Significance of Differences Between the Control Group and the Experimental Group for Gain in Spelling	39
IV.	Number of Boys and Girls in Each Level of the Experimental Group	41
V.	Significance of Differences for the Three Levels of Experimental Group For Improvement Score in Spelling, Column O	42
VI.	Significance of Differences for the Three Levels of the Experimental Group for Improvement Score in Paragraph Spelling	43
VII.	Significance of Differences Between Boys and Girls of the Experimental Group for Improvement in Spelling	45

CHAPTER I

THE PROBLEM

I. STATEMENT OF THE PROBLEM

Research reports indicate that in spite of the need to spell correctly in written communication, individuals are not spelling as well as they should. Therefore, the methods of selecting words for study and the methods of mastering the spelling of the words after they have been selected must be evaluated carefully. Just as one can expect to find varying abilities in reading and mathematics, he can also expect to find varying abilities in spelling. It appears logical to select words and devise methods of study to suit these varying abilities.

The purpose of this study was to adapt the individualized spelling method to the learning of spelling in a senior elementary class. A system of assessment was devised to statistically test the significance of the results. The teachers made an attempt to motivate the individual pupils by giving them the opportunity of studying words for which they had a particular need. An experimental class of grade four pupils was taught by the individualized spelling method. The control group of grade four pupils was taught by the group instruction approach. The two classes were compared to determine which method of teaching spelling appeared to help pupils make the greatest gains in spelling achievement. In addition, a comparison was made regarding spelling improvement of the boys and the girls, and the three capacity levels of the experimental group.

II. DEFINITION OF TERMS USED

Individualized Spelling

Individualized spelling is a method of learning spelling, whereby the learner is constantly locating his own spelling errors and attacking these errors on a strictly individual basis under the guidance of his teacher. Words for personal spelling lists are gathered from individual errors on basic core lists dictated to the entire class by the teachers and from errors on written assignments. Thus the pupil studies only those words which he cannot spell.

Control Group

This group refers to seventy children who were matched according to sex, chronological age, I.Q., spelling achievement on a spelling scale, and paragraph spelling with seventy children of the experimental group. The control group studied common lists of spelling from an authorized workbook using the traditional one group method.

Experimental Group

Seventy children of this group studied spelling by the individualized spelling method. In addition, the total group of eighty-one children was grouped in the two following ways:

(a) Boys and girls. This refers to the total group of boys and girls who were present at the fall and spring testing.

(b) High group. This refers to the thirty pupils who were considered by the principal and the staff to have above average capacity as measured by intelligence tests and as indicated in the area of language arts and arithmetic. Judgements were made on the basis of data

which the school possessed before the experiment took place.

Average group. The thirty-two pupils not selected for the high group or the low group comprised the average group.

Low group. The low group was comprised of nineteen pupils who were considered by the principal and his staff to be below average in intelligence and ability in the language arts and arithmetic.

Column O Spelling

Column O spelling refers to a list of one hundred words selected from Column O of the Buckingham Extension of the Ayres Spelling Scale.

Column Q Spelling

Column Q spelling refers to a list of one hundred words selected from Column Q of the Buckingham Extension of the Ayres Spelling Scale.

According to the spelling scale Column Q was considered to be more difficult than Column O. For example, the percentage required for a grade four level in Column O was seventy-three per cent, whereas fifty-eight per cent gave the same grade level in Column Q.

Paragraph Spelling

In this study paragraph spelling refers to the percentage of words written correctly in a paragraph written by the pupil during a period of twenty minutes. It was intended to serve as a measure of spelling growth as applied to written assignments.

Progress Chart

The progress chart refers to the chart on which each pupil charted his progress using a line graph. In addition to marking the number of words written correctly on each test, the pupil charted the number of

words selected for study.

III. HYPOTHESES

The following null hypotheses regarding spelling growth were tested in this study:

A. There is no significant difference between the experimental group and the control group in:

1. growth in spelling achievement as measured by Column O of the Buckingham Extension of the Ayres Spelling Scale.

2. growth in spelling achievement as measured by Column Q of the Buckingham Extension of the Ayres Spelling Scale.

3. the number of spelling errors as indicated in paragraph writing.

B. There is no significant difference between the high, average, and low capacity groups of the experimental group in:

1. amount of improvement in spelling as measured by Column O of the Buckingham Extension of the Ayres Spelling Scale.

2. amount of improvement in spelling as indicated in paragraph writing.

C. There is no significant difference between the boys and the girls of the experimental group in:

1. amount of improvement in spelling as measured by Column O of the Buckingham Extension of the Ayres Spelling Scale.

2. amount of improvement in spelling as indicated in paragraph writing.

IV. THE EXPERIMENTAL DESIGN

Two grade four classes were selected in order to test the hypotheses made for this study. The experimental group of three classes of grade four pupils studied spelling by the individualized spelling method. The control group of five grade four classes learned spelling from an authorized spelling workbook with teachers using the one group method of teaching.

Tests were given for the purposes of matching pupils and measuring spelling growth. Tests in intelligence, spelling achievement, and paragraph spelling were administered to both groups before the experiment began. At the end of the experiment tests in spelling achievement and paragraph spelling were given.

Seventy pupils of the experimental group were matched with seventy pupils of the control group according to sex, chronological age, I.Q., spelling, and paragraph spelling. Comparisons in spelling growth were made between these two matched groups.

Further comparisons were made between the three capacity levels of the experimental group and between the boys and the girls of the experimental group.

V. LIMITATIONS OF THE STUDY

The conclusions in this study are subject to the following limitations:

1. The experimental group was in the same school as the experimenter; therefore, greater interest and effort in the field of spelling might have been expected. Consequently, test results of the experimental group may have been somewhat higher than if the group was in a different school.

2. The individualized spelling method was a new approach to the learning of spelling for the pupils in the experimental group. The pupils of the control group used a familiar method. As a result, one might have expected the pupils of the experimental group to be more highly motivated and thus gave greater effort than the pupils of the control group.

3. The individualized spelling method was employed in the experimental group for eight months. The method was new for the teachers of this group; therefore, they were learning as the experiment proceeded. If they should use this method again at a future date, they might feel more confident with the procedure.

4. The teachers of the control group averaged approximately eighteen years in teaching experience compared with an average of five and one-third years for the teachers of the experimental group. According to Tetley¹ the results may have been biased in favor of the experimental group.

5. Although the experimenter attempted to match the teachers of the experimental group and the control group according to years of training and years of experience, one must recognize that it was impossible to match teachers exactly in aspects such as interest, effort and teaching ability.

¹Dorothy F. Tetley, "Teacher Characteristics and Reading Achievement" (unpublished Master's thesis, The University of Alberta, Edmonton, 1964).

6. For comparisons of achievement of the three levels of the experimental group, it was impossible to match the teachers of the group closely.

7. In comparing the three levels of the experimental group and in comparing the boys and the girls of the same group, the experimenter looked for spelling improvement only. Because Column Q was considered to be more difficult than Column O, only Column O could be used to measure this spelling improvement.

8. In the written paragraph, it was recognized that the number of words written correctly compared with the total words written may not have been an accurate measure of spelling ability. Some pupils, for example, may have limited their vocabulary to the words they knew how to spell.

VI. SIGNIFICANCE OF THE STUDY

Many Alberta schools are attempting to adapt the curriculum to the individual pupil by employing different methods of grouping and streaming. Programmed learning has been introduced in the past few years.

In spite of the various methods of grouping there appears to be little evidence of research in providing for individual needs in spelling. The experimenter feels that in spite of the adequate time-tabling of spelling too much time is wasted on words pupils already know and on methods which do not suit the individual pupil. It appears that a different approach to the problem of learning to spell needs to be investigated.

The significance of this study was that it examined the individualized spelling as a way of providing a functional attack on new words. Another important factor, the transfer to spelling improvement in written assignments, was examined.

CHAPTER II

REVIEW OF RELATED LITERATURE

Although there is an abundant amount of literature on the general topic of spelling, that which applies specifically to the field of individualized spelling appears to be limited. The literature reviewed for this chapter has been organized under five headings, namely, general problems in the field of spelling, selection of words to study in spelling, methods of teaching spelling, and individualized instruction. The chapter concludes with a brief summary.

I. GENERAL PROBLEMS IN THE FIELD OF SPELLING

Achieving literacy continues to be one of the basic goals for the children in our schools. Despite the new methods of oral communication there is still the necessity of accurate written communication.

Fitzgerald declared:

Spelling is a part of life, a skill which, if properly mastered, facilitates written expression and makes living more pleasant and more adequate. Children must learn to spell the words which they need in order to express themselves clearly in the situations which call for writing.¹

The problems involved in arriving at an acceptable degree of accuracy

¹ James A. Fitzgerald, The Teaching of Spelling (Milwaukee: Bruce Publishing Company), 1951, p. 1.

in spelling are many. Dolch² pointed out that the average person will write only a small portion of the total words given in a dictionary; therefore, the question of how many words to teach arises. Hildreth³ suggested three reasons for the difficulty of English spelling: inconsistencies in word structure, broad range of English words with all their variations, and all the different letter forms that are used in handwriting and typing. In addition, one must consider such factors as grade arrangement of content and choice of methods of teaching in relation to the needs and capabilities of the child.

Learning to spell accurately and the problems involved have not become a point of concern in just the last hundred years. As early as the years 500 and 600 Christian missionaries took the Latin alphabet with them to England and tried to write down the English language they heard. In the fifteenth century there were widespread changes in pronunciation but such distinct changes were not made in spelling. The varied orthography continued until the first half of the seventeenth century. Writers and printers may be considered largely responsible for the fixed spelling we have nowadays. In 1806 Webster of the U.S.A. published a dictionary which advocated a change in many words in English spelling. Although his innovations were not accepted completely, changes did occur and we now have the problem in Canada of American spelling

²Edward W. Dolch, Better Spelling (Champaign: The Garrard Press), 1942, p. 1.

³Gertrude Hildreth, Teaching Spelling (New York: Henry Holt and Company), 1955, pp. 4-6.

versus English spelling of the same word.⁴

Educators are aware that problems in spelling continue while there are previous problems remaining to be solved. The challenge might be to study what research has to say about the main problems in the field of spelling and take steps to help solve these problems. Horn of the State University of Iowa prepared a statement of some of the practical implications of research in the teaching of spelling. He stated that:

The advantages of good spelling ability and the disadvantages of poor spelling ability amply justify careful systematic planning for helping pupils learn to spell correctly. This involves (a) the improvement of the curriculum, the selection of content and its grade arrangement, (b) the choice of efficient methods of teaching, and (c) the use of tests for guiding instruction and appraising its results.⁵

II. SELECTION OF WORDS

Relative to the area of selection of content and its grade arrangement, several factors enter into the inclusion of words in a spelling list. Anderson⁶ suggested six main factors to consider in choosing words for study: (1) geographic factors (2) number of writing areas in which the word will be used (3) quality of the word (4) importance of the word

⁴Some Arguments For and Against Reforming English Spelling (A report prepared for the Canadian Conference on Education: Kingston: Committee Representing the Canadian Linguistic Association and the Association of Canadian University Teachers of English, 1962), pp. 1-2.

⁵Ernest Horn, Teaching Spelling, What Research Says to the Teacher, N.E.A. Bulletin No. 3 (Washington D.C.: National Education Association Press), 1954, p. 3.

⁶Paul S. Anderson, Resource Materials for Teachers of Spelling (Minneapolis: Burgess Publishing Company), 1959.

(5) permanency and (6) difficulty. He maintained that: "The fixed grade placement of words is inconsistent with variability of pupils of similar age and experience in learning to spell."⁷

Grade placement of words appears to be inconsistent with what research tells us about the difference in the spelling ability of boys and girls. Fitzpatrick and Zingle⁸ compiled a Canadian Spelling Demons list for grades two to five from selections written by 13,368 students in grades two to twelve. They concluded that "Canadian girls misspell significantly fewer words in their free writing than do Canadian boys."⁹ McKay¹⁰ found that girls in grades nine, ten, and eleven were significantly better than boys in spelling but that there was no significant difference in grade twelve.

The policy of expecting pupils to master four to five thousand words by the end of grade six is not supported by some of the leading educators in the area of spelling. Anderson stated that: "A person who learns 2,800 words knows about 97 per cent of the words in common use."¹¹ Fitzgerald¹² maintained that at the end of elementary school a child should have

⁷Ibid., p. 13.

⁸W. J. Fitzpatrick and H. W. Zingle, "Sex Differences in Spelling in Canadian Children's Free Writing," The Alberta Journal of Educational Research, VI (December, 1960).

⁹Ibid., p. 209.

¹⁰Doreen P. McKay, "A Study of the Spelling Achievement of Rural High School Pupils," The Alberta Journal of Educational Research, VIII (March, 1962).

¹¹Anderson, op.cit., p. 11.

¹²Fitzgerald, op.cit., p. 11.

command of a basic core of 3,000 words plus a method of independent attack on new words. He preferred an overlap of child vocabulary and adult vocabulary compiled from valid writing resources.

Fernald suggested that the most satisfactory spelling vocabulary is that supplied by the child himself. She gave formal lists only a small place in the spelling program for, she said, they "will always fail to supply the particular words a person should have at a specific time."¹³

It would appear that a reasonable policy to follow in selecting words would be to supplement a basic core list with further words needed in daily assignments.

III. METHODS OF TEACHING SPELLING

Research stressed the need for examining the methods of teaching spelling after the decision had been made regarding the selection of words for study. The consensus of opinion appeared to favor varied techniques to suit the different responses of the individual pupils.

Bremer¹⁴ maintained that teachers need greater knowledge of the general topic of spelling and need to use better methods of teaching. Russell spoke of the trend of setting up a course of studies:

There is a very real danger, however, that a set,

¹³Grace M. Fernald, Remedial Techniques in Basic School Subjects (New York: McGraw-Hill Book Co., Inc.), 1943, p. 206.

¹⁴Neville H. Bremer, "Ways to Improve Spelling in the Elementary Grades," Elementary English, XXXVIII (May, 1961).

ritualistic method of teaching new words has become so widely adopted that improvement in spelling is being hindered. The view that the last word has been said on spelling instruction is distinctly misleading.¹⁵

Russell suggested that the elementary school place more emphasis on developing pupils' techniques for mastery of a word and less emphasis on acquiring a spelling vocabulary of four to five thousand words. He believed that adequate and varied techniques of word study allow "for some incidental learning and the rich language experiences which are the best preventatives of spelling disability."¹⁶

Strickland¹⁷ maintained that regardless of how spelling is handled in a classroom, the attitude of the child toward learning spelling determines in large measure how much he learns. Delacato¹⁸ reported an interesting two year study comparing a formal and an informal approach to the teaching of spelling. Pupils using the formal approach used a spelling workbook. In the informal approach words from the children's experiences were used in individual spelling study time combined with formal teaching for half time. In the experimental group special emphasis was placed on a good attitude toward language and creative writing. Delacato

¹⁵David Harris Russell, Characteristics of Good and Poor Spellers (New York: Teachers College, Columbia University), 1937, p. 9.

¹⁶Ibid., p. 90.

¹⁷Ruth Strickland, "Utilizing Spelling Research," Childhood Education, XXXII (October, 1955).

¹⁸Carl H. Delacato, "Spelling - A Five Year Study", Elementary English, XXXII (May, 1955).

reported that pupils using the experimental method had a much better attitude toward spelling and that this better attitude extended into the language area. Ahrens¹⁹ hypothesized that children can be motivated by talking through problems related to spelling and by participating in planning the program of spelling participation.

It is important that the question of attitude not be considered a factor involving the child alone. Bremer²⁰ suggested enthusiasm on the part of the teacher and the pupil as one of the suggested general procedures in improving spelling. Horn felt that "the lack of student interests in spelling has been exaggerated."²¹ He stated further that "spelling is reported to be one of the subjects which many teachers most dislike to teach."²² Horn concluded the question of motivation with the following statement:

Enthusiastic, sympathetic classroom teachers often get good results even though they do not otherwise make use of the most efficient learning procedures. Teachers who use potentially efficient procedures but in a mechanical way get poor results. There is no reason why enthusiasm, sympathy, and efficiency should not be combined.²³

¹⁹Maurice R. Ahrens, "Improved Spelling Through Action Research", Instructor (May, 1958).

²⁰Bremer, op. cit.

²¹Ernest Horn, Spelling, Encyclopedia of Educational Research (New York: Macmillan Company), 1960, p. 1347.

²²Ibid., p. 1347.

²³Ibid., p. 1347.

Two basic methods of instruction, the study-test and the test-study are generally recognized among educators. Different authorities have shown favor for each plan under varying conditions. Fitzgerald²⁴ reported that Blanchard²⁵ in a review of literature for the two methods stated that about twice as many investigations favored the test-study plan as compared with the study-test method. Many studies reported no significant difference. In her own thesis Blanchard indicated the test-study plan to be significantly better than the study-test plan.

One of the most significant reports is one in which the Scottish Council for Research in Education gave particular importance to the results of the Gates investigation:

These indicate that the brightest classes do best with the Test Study method while duller classes, especially in the earlier grades, score better when taught on the Study-Test plan.²⁶

On the basis of an analysis of one hundred twenty-one original pieces of research in spelling, Pavlak made the following statement:

After carefully studying and comparing the findings of the various scientifically accurate research studies, it was found that the studies did not agree

²⁴Fitzgerald, op. cit.

²⁵Sister M. Gervase Blanchard, An Experimental Comparison of Test-Study and the Study-Test Methods of Teaching Spelling in the Eighth Grade, unpublished Master's Thesis (Fordham University, New York), 1944.

²⁶Scottish Council for Research in Education, Studies in Spelling, (London: University of London Press, Ltd.), 1961, pp. 80-81.

as to the general method of teaching spelling. According to the accepted investigations, neither the test-study method nor the study-test method was superior in the teaching of spelling. An analysis of the scientific studies showed that there was a general trend toward conducting research on the value of the individual method of teaching spelling.²⁷

IV. INDIVIDUALIZED INSTRUCTION

Articles and studies on selection of spelling words, teacher and pupil attitudes, and test-study versus the study-test method all pointed out the need to provide for the individual spelling needs of each child. The investigation of the merits of individualized instruction is beginning to be evident in the field of research.

Relative to the field of individualized instruction and particularly important in total field of language arts is an individualized program in reading advocated by Veatch.²⁸ She defined individualized reading in the following way:

An individualized reading program provides each child with an environment which allows him to seek that which stimulates him, choose that which develops him most, and work at his own rate regardless of what else is going on. Seeking, self-selection, and pacing are the concepts²⁹ that give individualized reading its unusual quality.

²⁷Stephen E. Pavlak, "A Critical Analysis of Scientific Research in Spelling", Doctoral Dissertation (Pittsburgh: University of Pittsburgh), 1956, p. 212.

²⁸Jeanette Veatch, Individualizing Your Reading Program (New York: G. P. Putnam's Sons), 1959.

²⁹Ibid., p. 195.

Instruction on an individual one-to-one basis was stressed. The teacher-pupil conference was the high point of the entire reading program. Pupils met in groups only when there was a specific need.

Many educators favor the individualized reading approach whereas others do not support the program.

Gantz³⁰, a school principal from Maryland, reported an experiment in which she adapted the individualized reading approach to grouping for learning spelling in a sixth-grade class. Each pupil was asked what helped him most in learning words, how many words he would like to try each week, and what the sources of words might be. The number of words attempted each week ranged from twenty-five to one hundred twenty-five. Each pupil discussed his past successes and failures in spelling.

Many different methods were used to learn the words. Five children from all reading levels pronounced the words whenever a child was ready for testing. Every attempt was made to make spelling a personal obligation of each pupil.

Although no statistical evidence was given to support the statement, Gantz maintained that the experiment was a success. In considering the teachers' role she stated:

If he attempts to free his pupils to work on their own problems by methods which they devise; if he then assists in the evaluation of those methods and whatever modifications or substitutions appear wise; and if, through his encouragement to try again, he finally

³⁰Gertrude S. Gantz, "...with vast delight, he spells...", National Elementary Principal, XXXVIII, Number 7.

brings them to a point of success through their own efforts, he has indeed brought them to what becomes no longer drudgery but a "vast delight". This, certainly, we must strive for in the teaching of spelling.³¹

An individual approach to the teaching of any subject requires careful planning on the part of the teacher. Jean and Paul Hanna³² reported that many teachers used the individual approach to spelling during the years 1930-55 when educators gave widespread attention to individual differences. In some cases pupils were responsible for building their own spelling list out of a growing need to write. These children had no spelling lesson unless they felt a need to study. Needed words were entered in an appropriate section in the child's notebook. The authors of this article pointed out that inertia or lack of spelling sensitivity of those who needed to practise regularly and systematically prevented them from learning a basic vocabulary of 3,000 words and derivatives.

Eisman³³ reported success with an individualized spelling program at the grade three level. The children on the group method used a weekly spelling list. The children on the individualized program selected words from graded lists. For the latter group, selection of

³¹Ibid., p. 26.

³²Jean S. and Paul R. Hanna, "Spelling as a School Subject: a brief history," National Elementary School Principal, XXXVIII, Number 7 (May, 1959).

³³Edward Eisman, "Individualizing Spelling", Elementary English (May, 1962).

words, studying, and testing were on an individual basis. Mean I.Q. varied by .5 of a point. Mean mental age was identical. Eisman reported that at the end of the experiment the children on the individual program worked 1.5 grades higher in spelling than the children in the group program.

The same program was tried with pupils in the fifth and sixth grades. Eisman reported that relative success diminished as it was used with older children; however, he concluded that learning is most successful when the learner is allowed to proceed at his own rate.

Twombly and Edgerton³⁴ reported an experiment in which spelling was studied by programmed learning. Spelling frames for grade three pupils were constructed using words compiled from basic core lists. In comparing the experimental and the control groups they stated that the experimental group made gains which proved to be statistically significant.

V. SUMMARY

The review of literature indicated some points that the investigator felt could be incorporated into this spelling study. There was no indication that one set method would solve spelling problems for all children. The necessity for helping children develop different techniques to attack new words was evident.

In an attempt to meet the spelling needs of the individual pupil,

³⁴Ruth W. Twombly and Alice K. Edgerton, "A Programmed Course in Spelling", Elementary School Journal, LXII, Number 7 (April, 1962).

the teacher-pupil conference in Veatch's individualized reading plan³⁵ was combined with certain aspects of the individualized spelling method, reported by Gantz.³⁶ It appeared that Gantz's experiment needed a sounder base on which to make conclusions; therefore, the study was reorganized and appropriate statistical measures were applied to the test results. In building a personal word list each child supplemented his errors from Fitzgerald's basic core list³⁷ with spelling errors from his daily assignments. The teachers assisted the pupils in developing a variety of techniques of attack on spelling words. It was hoped that a new approach with stress on the individual needs of each child would help provide the desired motivation for both the teachers and the pupils.

³⁵Veatch, op. cit.

³⁶Gantz, op. cit.

³⁷Fitzgerald, op. cit.

CHAPTER III

RESEARCH DESIGN

This chapter describes the research design employed to test the hypotheses regarding the individualized spelling method. Full details are given concerning the selection of both the pupil sample and the teacher sample involved in the study. Description and method of administering the testing instruments are presented. The chapter concludes with a description of how the data from this experiment was treated.

I. SELECTION OF SAMPLE

Pupil Sample

In an effort to select a sample of population with similar socio-economic conditions, the experimental group and the control group were taken from the Grade 4 classes in two neighboring Alberta towns, each with a population of approximately two thousand. Both schools were in towns which were in the centre of thriving mixed farming districts. Approximately one-half of the pupils were transported to their schools by school bus.

To allow for a greater degree of linguistic maturity and independence in work habits, Division II, rather than Division I, of the elementary school was selected for this study. The Grade 4 classes were chosen for the experiment for two additional reasons:

- (1) The fact that the experimenter taught classes regularly

at the Grade 6 level might have produced biased results.

(2) In Grade 5 it was impossible to match the teachers closely in years of training.

In each school the Grade 4 classes totalled approximately ninety to one hundred thirty pupils arranged homogeneously in classes with enrolments of approximately twenty to thirty-five pupils each.

TABLE I
NUMBER OF PUPILS IN EACH CLASS LEVEL IN THE
CONTROL GROUP AND IN THE EXPERIMENTAL GROUP

CLASS	CONTROL GROUP	EXPERIMENTAL GROUP
A	32	30
B	31	32
C	27	19
D	21	
E	16	

The pupils had been placed in homogeneous classes prior to the time that the experimenter had selected them for the study. In placing these pupils in homogeneous classes, the principals and teachers of the respective schools had considered three factors:

- (1) I.Q.
- (2) achievement in reading as indicated in cumulative records
- (3) the personal opinions of the classroom teacher and the principal.

Due to absence from school on days of testing or variables which did not match as closely as desired, all pupils were not considered in the final sample of the population. After the experiment was completed, seventy pairs of pupils from the experimental group and the control group were matched according to sex, I.Q., age in months, spelling achievement as indicated on a grade placement test, and spelling achievement in paragraph writing to test Hypothesis 1. To test Hypotheses 2 and 3, eighty-one pupils of the experimental group (that is, all pupils present at both fall and spring testing) were used.

Teacher Sample

In both groups years of teacher training for the teachers averaged approximately one and one-half years. The average age of the teachers in the two groups was within two years of being the same.

In the experimental group one teacher had returned to the teaching profession after several years' absence whereas the other two teachers had taken one year training and were continuing their education through summer school session.

Years of teacher training averaged one and one-half years in the control group. In this group none of the teachers had taken any further university courses since 1959. The average of the years of experience for this group was eighteen years with none less than thirteen years or more than twenty-four.

II. TESTING INSTRUMENTS

Three testing instruments were used in this experiment. Because research has shown that I.Q. is a determining factor in spelling achievement, the Otis Beta Test of Mental Ability was administered to all the pupils

of both groups. Word lists from the Buckingham Extension of the Ayres Spelling Scale were used to measure spelling growth. Finally each pupil was asked to write two paragraphs which the investigator used as a measure of spelling growth in written assignments.

Otis Beta Test of Mental Ability - Form A

The Otis Beta Test of Mental Ability was given to both groups to measure the intelligence of the pupils as an aid in matching pairs from both groups.

The Otis Beta Test of Mental Ability for Grades Four to Nine is a revision and extension of the Intermediate Otis Self-Administering Test of Mental Ability. The test is composed of eighty multiple choice questions which are answered by marking the correct answer with an X. In making up the thirty-minute test, Otis tried to choose questions that depended as much as possible on thinking and as little as possible on schooling. The two forms of the test, A and B, are similar in construction and in difficulty but different in content.

Two reliability coefficients are available for this test. In comparing Form A and Form B the average of the coefficients is .79. The coefficient of correlation between the odd and even items of the test and corrected by the Spearman-Brown formula is .86.¹

The determination of the validity of each item consisted of comparing the number of passes of that item by a group of pupils who were making rapid progress through school

¹Arthur S. Otis, Manual of Directions for Beta Test, Forms A and B (New York: Harcourt, Brace and World, Inc.), 1937, 1939, p. 10.

with the number of passes of the item by a group of pupils who were making slow progress through school. Only those items were used which showed a distinct gain in number of passes of the rapid-progress pupils over the number of passes of the slow-progress pupils.²

Buckingham Extension of the Ayres Spelling Scale

The Buckingham Extension of the Ayres Spelling Scale is a spelling scale of 1,505 words arranged in columns. The original 1,000 words selected by Ayres were words most frequently used in writing. Buckingham added 505 words most commonly listed in spelling books. Evidences of reliability and validity are not available for this test. Buckingham's original plan was that the spelling scale be used as a source for selecting words for spelling tests; however, some teachers use the scale as a study of commonly used words.³

In this study the scores gained by the pupils from Column O of the Buckingham Extension of the Ayres Spelling Scale were used as one of the variates in matching pairs, and also as a device to measure:

- (1) spelling achievement of the experimental group as compared with the control group,
- (2) spelling improvement of the three levels in the experimental group, and
- (3) spelling improvement of the boys in the experimental group as compared with the girls in the same group.

Words selected from Column Q of the same spelling scale were given to both groups at the end of the experiment to measure spelling achievement

²Ibid., p. 11.

³ . . .
B.R. Buckingham, Buckingham Extension of the Ayres Spelling Scale (Indianapolis: Bobs-Merril Company, Inc.), pp. 2-3.

of the pupils on words for which they had not been previously tested.

Words were dictated to each class in the same manner. Each word was pronounced, given in a sentence, and pronounced again. All pupils were given enough time to write or attempt to write each word.

The results of the spelling tests were recorded as raw scores.

Informal Spelling Test

To measure the pupils' growth in spelling in written assignments when they do not know they are being tested for spelling, two paragraphs were written, one at the beginning of the experiment and another when the study was completed.

In September, 1963, a paragraph entitled My Favorite Leisure Time Activity was written by each member of both groups. The experimenter spent approximately four minutes motivating the children and then allowed twenty minutes for writing. The pupils were not allowed to get any assistance in the spelling of words; however, they were encouraged to use words they needed to express themselves accurately even if they were not spelled accurately.

At the end of the experiment a paragraph entitled If I Had A Wish was written according to the same plan as outlined for the paragraph at the beginning of the experiment.

In scoring each paragraph, a count was made of the number of spelling errors made by the child in writing the paragraph. The ratio of the number of words spelled correctly to the number of words written was expressed as a percentage. A comparison of the spelling results before and after the experiment helped in determining what improvement had been made in spelling as applied to written assignments.

III. PROCEDURE

Testing Program

The following tests were given by the experimenter to the experimental group and the control group during the third week of September, 1963:

- (1) Otis Beta I. Q. Test - Form A
- (2) One hundred word spelling achievement test selected from Column O of the Buckingham Extension of the Ayres Spelling Scale
- (3) Paragraph entitled My Favorite Leisure Time Activity.

Eight months later during the third week of May, 1964, the following tests were given to the experimental and control groups:

- (1) The same one hundred word spelling achievement test, Column O, Buckingham Extension of the Ayres Spelling Scale, that was administered at the beginning of the experiment.
- (2) One hundred word spelling achievement test selected from Column Q, Buckingham Extension of the Ayres Spelling Scale. This test was given as a second measure to compare the experimental and the control group in spelling achievement. According to the spelling scale the words in Column Q were considered more difficult than the words in Column O.
- (3) Paragraph entitled If I Had a Wish

All tests for both groups were administered, timed and marked by the experimenter. All grade four pupils in attendance on the days of testing wrote the tests.

Teaching Procedure for the Experimental Group

Initial week - Building word lists. Each child kept two notebooks. Notebook Number 1 was used for taking dictation from basic spelling lists,

writing all types of tests, working out exercises and studying words. Notebook Number 2 was used as a record of words selected for study. These words were recorded in the order in which they occurred.

Progress charts were inserted in Notebook Number 2. To encourage pupils to select as many words as they were able to learn in a week, they were asked to record on their progress charts the number of words selected in addition to the number written correctly.

Each pupil began building a list of words which were difficult for him. The first fifteen words from each of the following lists were dictated to the pupils on the first day:

(a) 350 Most Useful Spelling Words⁴

(b) 450 Very Useful Spelling Words⁵

(c) List of Canadian Spelling Demons (Gr. 2-5)⁶

On the succeeding days of the initial week further words were dictated until the average number of errors accumulated was approximately thirty per child.

Each pupil recorded in his spelling notebook, spelling errors he made in written assignments. Difficult words needed in unit studies in the enterprise activities were posted in the classroom for handy reference. Because these words were not commonly used when the unit was not being studied, the words were not entered in the spelling notebook for special study. Teachers checked at least every third written assignment for

⁴James A. Fitzgerald, The Teaching of Spelling (Milwaukee: Bruce Publishing Company), 1951, pp. 15-17.

⁵Ibid., pp. 18 - 21.

⁶W. J. Fitzpatrick, The Nature of Sex Differences in Spelling as Evidenced by Canadian Children's Free Writing, Unpublished Master's Thesis, University of Alberta, Edmonton, 1960.

spelling errors. Other assignments were checked for spelling errors by one of the pupil's classmates or by self-checking.

One week was spent in building word lists.

Teacher-Pupil Conference. An important feature of the individualized spelling method was the teacher-pupil conference. This conference was conducted according to the following plan:

(a) The teacher met with each pupil at least once per week. Further meetings were organized according to the need of the individual pupil.

(b) At the beginning of the week, the pupil, in consultation with his teacher, selected twenty words from his list of errors to study for the week. The number remained, increased, or decreased according to the weekly achievement of the individual child. The number of words selected ranged from five to thirty. Final decision depended greatly on the progress as indicated on the pupil's progress chart.

(c) At the teacher-pupil conference the teacher checked the pupil-checked exercises on creative writing and other assignments for:

- (1) accurate location of spelling errors
- (2) accurate correction of spelling errors
- (3) correct transfer of spelling errors to spelling record

book.

(d) Meetings to discuss appropriate methods of attacking specific problems in spelling were held whenever the need arose during the week. The number of pupils at these meetings ranged in size but at no time did the whole class meet for this purpose.

The total time spent in conferences with individual pupils did not

exceed an average of two minutes per child per week in the two upper classes or three minutes per child per week in the below-average class. The amount of time spent in conferences was determined mainly by the size of the enrolment of each class.

Weekly schedule. Words from the basic lists were dictated to the pupils on the first day of each week. Normally, fifteen words were selected alphabetically from each of the three lists for dictation. In the below-average group the teacher dictated words from the list, 350 Most Useful Spelling Words, until it was completed and then continued to the 450 word list and the spelling demon list. Depending upon the different abilities of the pupils, the teachers were free to dictate fewer words or more words (up to 25 from each list).

The pupils spent the second and third days studying words selected from their own list of spelling errors. The teachers helped the pupils in attacking a new or difficult word. Any methods outlined in any of the spelling texts or references were considered acceptable. During these periods the pupils worked individually except when the teacher arranged for a teacher-pupil conference or organized a group for a single purpose.

While this group was organized, attention was focussed on a single topic which was a problem for each member of the group; for example, the spelling of the words weather and whether.

The fourth day was the day for testing but a pupil could be tested sooner if he was prepared. Testing was done by either his teacher or a classmate. Checking of the words was done by the teacher.

Words written correctly were marked with a check mark on the pupil's

personal list, that is, the list recorded in Notebook Number 2. Errors were numbered in the list; for example, beautiful- 1,2,3, indicated that the word beautiful had been spelled incorrectly on three different tests. After the test had been marked, the individual progress chart was marked to indicate the number of words written correctly and the number of words selected.

The fifth day of the week was spent writing sentences or paragraphs using as many of the newly learned words as possible. In addition, words learned two weeks previously, plus any errors on the week's work, were reviewed.

Testing. Two major tests were given to each child every six weeks. Test I included all the words studied by the pupil in the preceding five weeks. Pupils worked in pairs to administer the tests but all tests were marked by the classroom teacher. Errors were recorded by the pupils.

Test II was a fifty word test comprised of a selection of words from lists studied since the beginning of the school year. Depending on the number of words studied, the teacher decided whether every second, third or fourth word of the child's personal list should be selected for the test. The pupils worked in pairs to administer the tests. All marking was done by the teacher. Errors were recorded by the pupils.

Inservice Training for Teachers

During the entire study, the experimenter had three formal meetings with the teachers of the experimental group. At the first meeting the experimenter outlined the teaching procedures of the individualized spelling plan and the program of testing to be conducted at the

beginning and at the end of the experiment.

The second meeting was held one month after the program had started. The purpose of the meeting was for any clarification of the individualized spelling method. Two revisions in the plan were made:

(1) For dictation of words from the three basic lists, the average class was divided into two groups. The better spellers were placed in one group.

(2) Because the pupils were making errors in copying, the teacher of the below-average class was given permission to record errors in the pupils' spelling notebooks.

The third meeting was called after the study was completed to discuss the results of the experiment and what implications this study could have in the teaching of spelling at the local level.

Two months after the experiment had started, the experimenter visited each of the experimental classes to see if the program was being carried out according to plan.

The teachers were asked to see that the following spelling activities were employed on an individual basis:

- (a) testing
- (b) selection of words
- (c) studying individual word lists
- (d) use of the dictionary
- (e) remedial instruction
- (f) charting progress
- (g) conference with the teacher
- (h) application to writing of assignments

Two meetings were held with the teachers of the control group. The

first meeting was held to explain to the teachers the purpose of the testing and to carry out the testing. At the end of the experiment the experimenter met with the teachers again to organize and carry out the final testing schedule.

Teaching Procedure for the Control Group

The control group followed the plan as outlined in Pupil's Own Vocabulary Workbook, a spelling workbook which had been authorized for use in Alberta classrooms. All the pupils of the grade were presented with the same list of words to study for the week. The plan was to pronounce the words and work on word meanings the first day, do the written exercise the second day, take a pre-test on the third day, study again on the fourth day in preparation for the test on the fifth day.

The investigator encouraged the teachers in the control group to use any additional methods of teaching that they might use in normal classroom routines. Thus the control group was using what appeared to be the most common method of teaching spelling in Alberta schools, the one group method.

TREATMENT OF DATA

Using the program designed by Hurst (1961) for the IBM 1620 machine, analysis of covariance was applied to the data for seventy pairs of pupils to check Hypothesis 1, Parts (a), (b) and (c).

In the analysis of covariance the four covariates were: Variable 1, the chronological age in months; Variable 2, the Beta I.Q. score; Variable 3, the score from Column O of the Buckingham Extension of the Ayres Spelling Scale; the Variable 4, the paragraph spelling score.

Seventy pairs of pupils were matched according to sex and the four variables. To determine whether there was any significant difference between the experimental and the control groups the following method was used:

(1) The mean for each variable in the two groups was calculated.

(2) Using analysis of variance the means were then compared taking one variable at a time.

Three categories for the experimental and control groups were analyzed separately. For example, Category I consisted of the scores attained by seventy pairs of pupils on Column O, Buckingham Extension of the Ayres Spelling Scale, after an eight month period. Category II included the scores on Column Q from the same spelling scale, and Category III the paragraph spelling scores.

For each category the following information was given in the output data:

- (a) means for each variable, both independent and dependent;
- (b) coefficients of each variable for regression equation which indicates how much of the variance of the dependent variable is predictable by the covariates;
- (c) total variance of the criterion;
- (d) residual variance of the criterion, i.e., variance not accounted for by the regression equation;
- (e) squared multiple correlation; and
- (f) "F" ratios to test the difference between group means for each variable.

Finally, an adjusted "F" ratio was given to test the differences between group means when these means have been adjusted for linear effects of the covariates using a multiple regression equation which incorporates the individual regression equations of all groups.

The means of the dependent variables for the experimental and control groups were adjusted for differences between the four covariates. The differences between the adjusted means were then tested to see if they were statistically significant.

By means of the analysis of covariance it was possible to determine what part of the variance of the dependent variables (that is, final tests on spelling achievement and paragraph spelling) could be attributed to the individualized spelling plan, when the effects of age, IQ, and spelling on an achievement test and in paragraph writing were accounted for in the regression equation on which the analysis was based.

The two way analysis of variance was used to analyze the difference between the amount of improvement in spelling in the high, average, and low capacity groups as indicated in Hypothesis 2. Calculations were based on the improvement scores in spelling as indicated on the spelling achievement test and in paragraph writing. Whenever an "F" ratio indicated an overall significant difference between the three groups, the means were tested by the use of Tukey's gap test.

To test Hypothesis 3, two way analysis of variance was followed by a "t" test (Ferguson, 1959, p. 238). Thus the significant difference between the spelling growth of the girls and the boys in the experimental group as measured by achievement on the spelling test and paragraph writing was analyzed.

CHAPTER IV

ANALYSIS OF DATA AND SUMMARY OF FINDINGS

This chapter is divided into five sections. The first section compares the control group and the experimental group for equivalence in chronological age, I.Q., Column O spelling and paragraph spelling. Section two contains data from the testing of the experimental group and the control group. Section three contains data from the testing of the three levels of the experimental class. Section four contains data from the testing of the boys and the girls of the experimental group. The final section is a summary of the findings.

I. COMPARISON OF THE TWO GROUPS FOR EQUIVALENCE

In the control group and the experimental group chronological age, I.Q., spelling test results and paragraph spelling results as recorded before the experiment were compared one at a time by analysis of variance. There were thirty-six boys and thirty-four girls in each group. Chronological ages were expressed in months. I.Q. was given as the Beta I.Q. Column O spelling was expressed as the number of words correct out of the hundred words dictated. Paragraph spelling was expressed in percentage (that is, the number of words written correctly out of the total words written and converted to percentage.)

Table II indicates that using chronological age, I.Q., Column O spelling, and paragraph spelling as variables, there was no significant difference between the experimental and control groups before the experiment began.

TABLE II
SIGNIFICANCE OF DIFFERENCES BETWEEN
THE EXPERIMENTAL GROUP AND THE CONTROL GROUP FOR
FOUR VARIABLES

Variables	Source	Means		df	Analysis of Variance			
		Experi- mental N=70	Control N=70		Sums of Squares	Mean Squares	F	P
C.A.		113.5	112.3	1	51.6	51.6	1.67	n.s.
	Group			138	4266.5	30.9		
	Within Total			139	4318.2			
I.Q.		104.4	102.8	1	92.8	92.8	.868	n.s.
	Group			138	14761.3	107.0		
	Within total			139	14854.2			
Spelling Col. 0		39.2	40.7	1	81.8	81.8	.145	n.s.
	Group			138	77807.2	563.8		
	Within Total			139	77889.0			
Paragraph Spelling		91.3	91.3	1	.0625	.0625	.0009	n.s.
	Group			138	9122.4	66.1		
	Within Total			139	9122.4			

II. COMPARISON OF THE EXPERIMENTAL GROUP AND THE CONTROL GROUP IN SPELLING

In May, 1964, all the pupils in the experimental group and the control group wrote three spelling tests. Column O of the Buckingham Extension of the Ayres Spelling Scale (that is, the same hundred word test that was written by all the pupils in attendance before the experiment) was written as a device to compare the two groups in spelling achievement on words they had written before. A hundred word test from Column Q of the same spelling scale served as a measure to compare the two groups in spelling achievement on words they had written before. A hundred word test from Column Q of the same spelling scale served as a measure to compare the two groups on words for which they had not been tested previously. Spelling achievement on written assignments was measured by a paragraph similar to the paragraph written by each pupil in the fall. Seventy pairs of pupils were selected for this section of the study.

Table III is a summary of the analysis of covariance used to show the significance of differences between the experimental and control groups, after the experiment had been completed.

The adjusted means for the month of May in Column O indicate a difference of .3 points in favor of the experimental group. There are no significant differences for either group.

The adjusted means for Column Q indicate a margin of 3.6 points in favor of the experimental group. This shows a significant difference at the five per cent level in favor of the experimental group.

The adjusted means for the paragraph spelling score indicate

TABLE III
SIGNIFICANCE OF DIFFERENCES BETWEEN
THE CONTROL GROUP AND THE EXPERIMENTAL GROUP
FOR GAIN IN SPELLING

Spelling	Source	Unadjusted Means		Adjusted Means		Analysis of Covariance			
		C N=70	E N=70	C N=70	E N=70	df	Mean Squares	Adjusted F	P
Column O	Group	65.7	65.2	65.3	65.6	1	3.28	.041	n.s.
	Within					134	79.4		
Column Q	Group	43.2	46.1	42.8	46.4	1	421.8	6.371	E.05
	Within					134	66.2		
Paragraph Spelling	Group	94.4	94.6	94.3	94.6	1	2.41	.132	n.s.
	Within					134	18.23		

C Control Group

E Experimental Group

a difference of .3 points in favor of the experimental group. This margin was not large enough to provide a significant difference at the one or five per cent levels.

It is interesting to note that although there was no significant difference between the two groups in Column O spelling, there was a significant difference at the five per cent level in favor of the experimental group in Column Q spelling. It would appear that the experimental group, the group which was encouraged to use a variety of word attack techniques during the experiment, was more successful in applying these techniques to the new words given in Column Q.

Both groups achieved equally well in paragraph spelling.

III. COMPARISON OF THE THREE ACHIEVEMENT

LEVELS IN THE EXPERIMENTAL GROUP IN SPELLING IMPROVEMENT

Eighty-one pupils of the three achievement levels of the experimental group were considered in this comparison. These pupils were present at both the fall and the spring testing. Spelling improvement in Column O spelling and paragraph spelling were the two factors considered.

The unequal distribution of boys and girls in two of the three capacity levels is a factor which may have affected the results in this section of the study. Table IV indicates that the high group was comprised of one-third boys and two-thirds girls. The average group contained about an equal number of both sexes. The low group contained approximately two-thirds boys and one-third girls. It is interesting to note that the high group had a high percentage of girls whereas the low group had a high percentage of boys.

Table V shows the significance of differences in spelling improvement

between the three levels of the experimental group. A spelling improvement score (that is, the improvement in the Column O test from September to May) was calculated for each pupil. The sums and means of the improvement scores indicate that the average group made the greatest improvement. The F ratio indicates an over-all significant difference at the one per cent level between the three levels. Tukey's gap test indicates: (1) No significant difference between the high and average groups.

(2) A significant difference at the one per cent level between the average and low group in favor of the average group.

(3) A significant difference at the one per cent level between the high and low groups in favor of the high group.

TABLE IV
NUMBER OF BOYS AND GIRLS IN EACH
LEVEL OF THE EXPERIMENTAL GROUP

SEX	HIGH	AVERAGE	LOW
Boys	10	17	13
Girls	20	15	6
N=	30	32	19

Table VI indicates the significance of differences between the same three groups as Table V for improvement scores in paragraph spelling. To remove any minus scores, a constant of ten was added to each score before computation was done. The low group scored the greatest gain with the high and average groups scoring approximately the same.

TABLE V
SIGNIFICANCES OF DIFFERENCES FOR THE THREE LEVELS
OF THE EXPERIMENTAL GROUP FOR IMPROVEMENT SCORE
IN SPELLING, COLUMN O

Groups	Source	N	Analysis of Variance							*Tukey's Gap Test	
			Sums	Means	df	Sums of Squares	Mean Squares	F	P	Differ- ences in Means	P
High		30	831	27.70							
Average		32	961	30.03							
Low		19	312	16.42							
	Be- tween				2	2350.05	1175.03	12.45	.01		
	With- in				78	7359.90	94.36				
	Total				80	9709.95					
High and Average										2.33	n.s.
Average and Low										13.61	Ave. .01
High and Low										11.28	High .01

* Gap Required 6.976 p= .01

5.259 p= .05

TABLE VI
SIGNIFICANCE OF DIFFERENCES FOR THE THREE ACHIEVEMENT
LEVELS OF THE EXPERIMENTAL GROUP FOR IMPROVEMENT SCORE
IN PARAGRAPH SPELLING

Groups	Source	N	Analysis of Variance							*Tukey's Gap Test	
			Sums	Means	df	Sums of squares	Mean squares	F	P	Differ- ences in Means	P
High		30	344	11.47							
Average		32	402	12.56							
Low		19	310	16.32							
	Be- tween				2	285.44	142.72	6.276	.01		
	Within				78	1773.45	22.74				
	Total				80	2058.89					
High and Average										1.09	N.S.
Average and Low										3.76	Ave. .01
High and Low										4.85	High .01

* Gap Required 3.427 p= .01
2.583 p= .05

The F ratio reveals an overall significant difference at the one per cent level. Tukey's gap test indicates:

- (1) No significant difference between the high and average groups.
- (2) A significant difference at the one per cent level between the average and low groups in favor of the average group.
- (3) A significant difference at the one per cent level between the high and low groups in favor of the high group.

No significant differences between the high and the average groups were indicated on either Column O spelling or paragraph spelling. On both spelling tests there was a significant difference at the one per cent level in favor of the average as compared with the low group, and the high group as compared with the low group.

IV. COMPARISON OF THE BOYS AND THE GIRLS OF THE EXPERIMENTAL GROUP IN SPELLING IMPROVEMENT

Table IV indicated a greater number of girls in the high group and a greater number of boys in the low group. The numbers were approximately equal in the average group. Table VII indicates a mean gain of approximately five points more for the girls than for the boys on Column O spelling. In the paragraph spelling constant of ten was added to each improvement score to remove minus scores in both groups. The mean gain made by the boys was approximately one and one-half points greater than the mean gain made by the girls.

Following the two way analysis of variance, the t test was applied to the spelling improvement scores of the boys and the girls in the experimental group to determine the significance of difference between the two groups. According to Table VII, the t test indicates a

TABLE VII
SIGNIFICANCE OF DIFFERENCES BETWEEN
BOYS AND GIRLS OF THE EXPERIMENTAL GROUP FOR IMPROVEMENT
IN SPELLING

Spelling	Number	Sum of Improve- ment Scores	Mean	Variance Estim- ate	t (df 2,78)	P
Column O						
Boys	40	940	23.50	123.80	2.135	G .05
Girls	41	1164	28.39	104.25		
Paragraph Spelling						
Boys	40	554	13.85	28.58	1.436	n.s.
Girls	41	502	12.24	21.16		

significant difference at the five per cent level in favor of the girls in Column O spelling improvement. In paragraph spelling improvement there was not enough difference between the two groups to show any significant difference.

There was no significant difference between the two groups in paragraph spelling improvement. In Column O spelling improvement there was a significant difference at the five per cent level in favor of the girls. These two groups were not equated before the experiment; therefore, it is possible that the results cannot be attributed to treatment alone.

V. SUMMARY OF THE FINDINGS

Using the analysis of variance and checking the four variables, chronological age, I.Q., spelling, and paragraph spelling, two at a time, there was found to be no significant difference between the experimental group and the control group selected for this experiment.

At the end of the experiment there was no indication of a significant difference between the two groups in Column O spelling or paragraph spelling. There was, however, a significant difference at the five per cent level in Column Q spelling in favor of the experimental group.

This evidence would indicate that the pupils who used the individualized spelling method were better prepared to attack new words.

In comparing the spelling improvement of the three levels of the experimental group in Column O spelling and paragraph spelling, there was no indication of a significant difference between the high and average groups. In comparing the average and low groups, and the high and low groups, there was a significant difference at the one per cent level in

favor of the average and high groups respectively.

A comparison of the spelling improvement of the boys and the girls in the experimental group, indicated a significant difference at the five per cent level in Column O spelling in favor of the girls. In paragraph spelling improvement there was no significant difference between the two non-equated groups.

CHAPTER V

FINDINGS, CONCLUSIONS AND IMPLICATIONS

This study examined the individualized spelling method as a functional method of attack on new words and the transfer to spelling improvement in written assignments. Comparisons were made between the experimental group and the control group, between the three capacity levels of the experimental group, and between the boys and the girls of the experimental group. The conclusions are based on an analysis of the data presented in Chapter IV. This chapter presents the findings regarding the three hypotheses, the conclusions based on these findings, limitations of the findings, the implications for future spelling programs, and recommendations for further research.

I. FINDINGS AND CONCLUSIONS

Hypothesis I.

There is no significant difference between the experimental group and the control group in:

1. growth in spelling achievement as measured by Column O of the Buckingham Extension of the Ayres Spelling Scale.
2. growth in spelling achievement as measured by Column Q of the Buckingham Extension of the Ayres Spelling Scale.
3. the number of spelling errors as indicated in paragraph writing.

Findings. The null hypothesis regarding Column O spelling and paragraph spelling was accepted.

The null hypothesis was rejected in growth in spelling achievement as measured by Column Q. In this case there was a significant difference at the five per cent level in favor of the experimental group.

Conclusions. Although the mean gains of the experimental group were slightly higher than the mean gains of the control group in Column O spelling and paragraph spelling, they were not high enough to prove either method to be superior. These findings would tend to agree with Pavlak's findings.¹ As a result of studying various research studies, he found that there was little agreement as to the best method of teaching spelling.

It would appear that in Column O spelling and paragraph spelling both groups had an equal opportunity due to having seen the words before or being able to limit their vocabulary to words with which they were familiar. However, in the more difficult words in Column Q spelling it is possible that the pupils of the experimental group were given a chance to excel with the various techniques of word attack they had become accustomed to using during the year.

Thus the test results on Column O spelling and paragraph spelling suggest that none of the spelling techniques employed in either method tends to be superior. However, the test results in Column Q spelling would appear to indicate that the techniques used in the individualized spelling method provide pupils with an advantage in attacking words which have not been included in previous formal spelling tests.

Hypothesis II

There are no significant differences between the high, average, and low capacity groups of the experimental group in:

1. amount of improvement in spelling as measured by Column

¹Pavlak, loc.cit.

0 of the Buckingham Extension of the Ayres Spelling Scale

2. amount of improvement in spelling as indicated in paragraph writing.

Findings. The null hypothesis was accepted when comparing the high and average groups.

The null hypothesis was rejected when comparing the average and low groups, and the high and low groups. There was a significant difference at the one per cent level in favor of the average and high groups.

Conclusions. It would appear that the pupils of the low group benefit the least when left to study on their own. Children of low ability appear to need more definite direction and teaching.

It is possible that the children with average or above average ability were more highly motivated when given an opportunity to work on just their own problems.

The test-study method of learning spelling was used more than the study-test plan in this study. The results of this experiment appear to support the results of Gates' investigation reported by the Scottish Council for Research in Education.² The Gates investigation favored the study-test plan for low ability groups.

Another point to consider was the distribution of the sexes in each of the intellectual levels of the experimental group. Research indicates that girls tend to be more successful in spelling than boys. In this experiment the high group contained a greater percentage of girls whereas the low group contained a greater percentage of boys. A different distribution of the sexes within each level may have given different

²Scottish Council for Research in Education, loc. cit.

test results.

Hypothesis III

There is no significant difference between the boys and the girls of the experimental group in:

1. amount of improvement in spelling as measured by Column 0 of the Buckingham Extension of the Ayres Spelling Scale.
2. amount of improvement in spelling as indicated in paragraph writing.

Findings. In Column 0 spelling the null hypothesis was rejected.

There was a significant difference at the five per cent level in favor of the girls.

The null hypothesis was accepted in spelling improvement as indicated in paragraph writing.

Conclusions. The view that girls spell better on spelling lists than boys is supported here. As stated in the discussion of Hypothesis II, one must consider again the proportion of boys and girls in each intellectual level. However, one must consider that the two groups are non-equated.

The boys made slightly higher gains than the girls in paragraph spelling. This does not support Fitzpatrick and Zingle's statement³ that Canadian girls spell significantly better than Canadian boys in free writing. It appears that the boys did equally well in paragraph writing; however, in this study paragraph topics were broad enough that the boys could write about subjects with which they were quite familiar. It is possible that this factor motivated the boys and thus gave scores which were closer in value.

³Fitzpatrick and Zingle, loc. cit.

II. LIMITATIONS OF THE STUDY

The conclusions drawn from the findings of this study must be considered in the light of the following limitations:

1. The Buckingham Extension of the Ayres Spelling Scale is not a recent publication, consequently it may favor a group studying from a workbook which is not a recent publication as compared with a group gathering words from current assignments.
2. Because the sample of boys and girls in the experimental group was drawn from one school, it is possible that the spelling test results of the three intellectual levels may not be typical of a broader sample of boys and girls.
3. In comparing the boys and the girls of the experimental for spelling growth, the two groups were not matched for intelligence or spelling achievement. This factor may have biased the results before the experiment began.
4. The sample in each intellectual level of the experimental group was limited in number and confined to one school, consequently data concerning spelling improvement of the three intellectual levels may not be true of a larger population in a broader geographic area.
5. The number of girls in the high capacity group was considerably larger than the number of boys in the same group, whereas the number of girls in the low group was considerably smaller than the number of boys in the low group. This factor may have affected the data in favor of the girls in comparing the three levels of the experimental group.
6. The experimenter was available for consultation with the teachers of the experimental group at any time. This may have produced a motivation factor in favor of the teachers and pupils of the experimental group.

III. IMPLICATIONS

Implications resulting from the foregoing findings, conclusions, and limitations indicate what teachers and principals might do to improve the spelling programs in their own schools.

This study appears to suggest the necessity for grouping children within a class for spelling study. Although the children of average or better ability achieved good results under an individualized spelling plan, it appeared that the children of below average ability needed more definite teaching. Whether children are organized homogeneously or heterogeneously in classes it would appear that further sub-division of the class is necessary to meet the widespread needs of the individuals. The teacher might consider dividing the class into three groups for spelling instruction, but remove individual pupils for individualized instruction whenever a specific problem occurs. In this way the individualized method of learning spelling would be superimposed on group teaching.

If teachers are going to help pupils learn to spell the words needed in daily writing as well as learn functional methods of attack on new spelling words, they must be prepared to discard set, ritualistic methods of learning words. Since no method appears to be the best in teaching spelling to an entire class, it seems essential that teachers use a variety of methods. Just as the abilities of pupils vary, it appears logical that some pupils may respond to one method whereas other pupils may respond to another way of presentation.

To keep teachers and principals posted on various spelling methods and spelling research, in-service training appears to be one of the best answers. It is important that teachers and principals be alert to the

changing picture in the field of spelling and be prepared to apply these new ways of thinking to their daily teaching.

Varieties of procedure often generate enthusiasm. The investigator supports Horn's view⁴ that an enthusiastic teacher appears to be the key to the success of a spelling program. Enthusiasm, combined with the desire to use a variety of methods, often generates enthusiasm and greater effort among the pupils. Horn believes that in an atmosphere of this kind results are often better regardless of procedures.

IV. RECOMMENDATIONS FOR FURTHER RESEARCH

On the basis of the supervision and completion of this study the investigator would like to offer recommendations for further studies in the field of spelling.

1. To test the effectiveness of individualized spelling with older pupils, an experiment might be conducted with pupils of grade nine or senior high school to make a comparative study of the spelling achievement of pupils who learn new words under the individualized spelling plan and those who have no definite plan for learning new words.

2. Experiments similar to the plan outlined in this study might be carried out with pupils in the primary grades or with pupils from grades four to eight to provide further evidence as to the value of the individualized spelling method.

3. Experiments might be conducted to determine the relationship between spelling achievement and attitudes of the teachers and the pupils.

4. An experiment might be conducted to make a comparative study of the individualized spelling method, the one group instruction approach

⁴Horn, loc. cit.

and a combination of the two approaches whereby a class would study from an authorized text three days of the week and use the individualized spelling method the remainder of the week.

5. A spelling study might be conducted in which spelling achievement would be measured by the Buckingham Extension of the Ayres Spelling Scale plus one or two other spelling scales of more recent publication to determine the comparative effectiveness of the spelling scales in measuring spelling achievement.

6. A long term study might be conducted to test the effectiveness of the one group method over a period of a number of years rather than a number of months.

7. An experimental study might be conducted to compare the spelling growth of a class taught by one method of learning spelling as compared with a class which has been taught spelling by a variety of methods.

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APPENDICES

APPENDIX A

TESTS USED IN THIS STUDY

BUCKINGHAM EXTENSION
of the
AYRES SPELLING SCALE

by
B. R. BUCKINGHAM



Printed in U. S. A.

943-12p

BUCKINGHAM EXTENSION OF THE AYRES SPELLING SCALE

By B. R. Buckingham

Directions for Using the Scale

This scale is not a test but a list of words from which the teacher may make a test. Although the scale was originally designed for use in the hands of the teacher as a scale from which to select words for testing purposes, some teachers are placing a copy of the scale in the hands of each pupil for a study of these commonly used words.

All the words in each column are of approximately equal spelling difficulty. The steps in spelling difficulty from each column to the next are approximately equal steps. The numbers at the top indicate about what per cent of correct spellings may be expected among the children of the different grades, at the end of the school year. For example, if 20 words from column H are given as a spelling test it may be expected that the average score for an entire second grade spelling them will be about 79 per cent. For a third grade it should be about 92 per cent, for a fourth grade about 98 per cent, and for a fifth grade about 100 per cent.

Since the per cents given in each column are for the *end of the school year*, the per cents are the upper limits for the given grades. Thus, for Column O, the complete ranges of per cents are as follows:

27 means from 12 through 27 and equals second grade ability;
50 means from 28 through 50 and equals third grade ability;
73 means from 51 through 73 and equals fourth grade ability;
84 means from 74 through 84 and equals fifth grade ability;
92 means from 85 through 92 and equals sixth grade ability;
96 means from 93 through 96 and equals seventh grade ability;
99 means from 97 through 99 and equals eighth grade ability;
100 equals ninth grade ability.

By means of these groupings a child's spelling ability may be located in terms of grades. Thus if a child were given a 20-word spelling test from the words of column O and spelled 15 words, or 75 per cent of them, correctly, it would be proper to say that he showed fifth grade spelling ability. If he spelled correctly 17 words, or 85 per cent, he would show sixth grade ability, and so on.

Interpolate for testing done at a time other than the end of the school year. Thus, in column O, if a child spelled the given words with a correctness of 62%, he would have spelling ability half way between the end of the third grade and the end of the fourth grade; that is, the middle of the fourth grade. This method of interpolation is further

illustrated by the "B score" sheet which is printed separately. These "B scores" give the equivalent per cents for about every third or fourth month of the school year for Columns L, O, R, T, V, X, and Z.

Since the words in any column are approximately equal in spelling difficulty, it is best to choose all of the words for a test from a single column.

Twenty words are enough to secure a reasonably reliable measure of the spelling ability of a class; but for such a measure of the ability of an individual 50 to 100 words will be required. Thus, owing to the fewness of the more difficult words, it may be necessary in testing upper grades to use words from more than one column. In such cases the differences in difficulty must be recognized.

In order that the words may be difficult enough really to measure spelling ability, they should be selected from columns for which the standard per cent of correct spellings is close to 50—say between 50 and 66.

The most appropriate measure of spelling ability is secured when the words are dictated in sentences at approximately the standard rate of handwriting for the grade in question, no test word occurring at the end of a sentence. The placement of words on this scale, however, is on the basis of returns from column dictation. Children spell more accurately when they write words in columns than they do when they write them in sentences. If, therefore, words are dictated in sentences, as suggested, results may be expected to be somewhat lower than the scale indicates. It was found that the words in each column from A through G fell three columns to the right when dictated in sentences (untimed); that those in columns H through Q fell two columns to the right; and that those in columns R through V fell one column to the right. No difference, due to dictation in sentences rather than in columns, appeared to exist for words harder than those in column V.

The 505 words added to the Ayres Scale by Buckingham are printed in italics. They were not chosen, as Ayres' words were, according to frequency in use in written discourse, but rather according to agreements among spelling books. They are not, therefore, offered as constituting a fundamental vocabulary in the same sense as do the original 1,000 words selected by Ayres. The original words of the Ayres Scale are printed in Roman.

BUCKINGHAM EXTENSION OF THE AYRES SPELLING SCALE

A	B	C	D	E	F
99	98	96	94	92	88
	THIRD GRADE➔	100	99	98	96
				FOURTH GRADE ➔	100
me do	and go at on	a it is she can see run	the in so now man ten bed top	he you will we an my up last not us am good little ago old bad red	of be but this all your out time may into him today look did like six boy book apple dog girls

BUCKINGHAM EXTENSION OF THE AYRES SPELLING SCALE

G	H	I	J	K			
84	79	73	66	58			
94	92	88	84	79			
99	98	96	94	92			
FIFTH GRADE➔	100	99	98	96			
		SIXTH GRADE➔	100	99			
by have are had over must make school street say come hand ring live kill late let big mother three land cold hot hat child ice play sea bread come eats food	day eat sit lot box belong door yes low soft stand yard bring tell five ball law ask just way get home much call long love then house year to I as send one has some if how her them other baby well about men for ran was that his led lay	nine face miss ride tree sick got north white spent foot blow block spring river plant cut song winter stone free lake page nice end fall feet went back away paper put each soon came Sunday show Monday yet find give new letter take Mr. after thing what than its very or	thank dear west sold told best form far gave alike add brave corn dance dinner egg looks rich	seven forget happy noon think sister cast card south deep inside blue post town stay grand outside dark band game boat rest east son help hard race cover fire age gold read fine cannot May line left ship train saw pay large near down why bill want girl part still place report	never found side kind life here car word every under most made said work our more when from wind print air fill along lost name room hope same glad with mine chair forgot hang meat mouse sits store supper	became brother rain keep start mail eye glass party upon two they would any could should city only where week first sent mile seem even without afternoon Friday hour wife state July head story open short lady reach better water round cost price become class horse care try move delay pound behind	around burn camp bear clear clean spell poor finish hurt maybe across tonight tenth sir these club seen felt full fail set stamp light coming cent night pass shut easy birds bone cloud garden goose knife mouth oak peach pole queen rope season space stands wagon wheat window

BUCKINGHAM EXTENSION OF THE AYRES SPELLING SCALE

	L	M	N				
SECOND GRADE➔	50	42	34				
THIRD GRADE➔	73	66	58				
FOURTH GRADE➔	88	84	79				
FIFTH GRADE➔	94	92	88				
SIXTH GRADE➔	98	96	94				
SEVENTH GRADE➔	100	99	98				
		EIGHTH GRADE➔	100				
	catch black warm unless clothing began able gone suit track watch dash fell fight buy stop walk grant soap news small war summer above express turn lesson half father anything table high talk June right date road March next indeed four herself power wish because world country meet	another trip list people ever held church once own before know were dead leave early close flower nothing ground lead such many morning however mind shall alone order third push point within done body <i>belongs</i> <i>cheese</i> <i>earn</i> <i>feather</i> <i>fence</i> <i>honey</i> <i>letters</i> <i>orange</i> <i>pocket</i> <i>shoes</i> <i>stairs</i> <i>stream</i> <i>tiny</i> <i>words</i>	trust extra dress beside teach happen begun collect file provide sight stood fix born goes hold drill army pretty stole income bought paid enter railroad unable ticket account driven real recover mountain steamer speak past might begin contract deal almost brought less event off true took again inform	both heart month children build understand follow charge says member case while also return those office great Miss who died change wire few please picture money ready omit anyway <i>arithmetic</i> <i>breakfast</i> <i>breeze</i> <i>broad</i> <i>chance</i> <i>climb</i> <i>coffee</i> <i>color</i> <i>contains</i> <i>daily</i> <i>eagle</i> <i>excuse</i> <i>fancy</i> <i>fasten</i> <i>flour</i> <i>forest</i> <i>gentle</i> <i>holes</i> <i>hotel</i>	<i>iron</i> <i>lining</i> <i>monkey</i> <i>noise</i> <i>ocean</i> <i>pencil</i> <i>sew</i> <i>sugar</i> <i>thread</i> <i>thunder</i> <i>tried</i> <i>truth</i>	except aunt capture wrote else bridge offer suffer built center front rule carry chain death learn wonder tire pair check prove heard inspect itself always something write expect need thus woman young fair dollar evening plan broke feel sure least sorry press God teacher November subject April history	cause study himself matter use thought person nor January mean vote court copy act been yesterday among question doctor hear size December dozen there tax number October reason fifth <i>baking</i> <i>cheap</i> <i>cheerful</i> <i>chicken</i> <i>driving</i> <i>echo</i> <i>fairy</i> <i>laugh</i> <i>leather</i> <i>linen</i> <i>mixture</i> <i>oysters</i> <i>peace</i> <i>rough</i> <i>smoke</i> <i>steal</i> <i>strange</i> <i>village</i> <i>voice</i>

BUCKINGHAM EXTENSION OF THE AYRES SPELLING SCALE

O			P		
27			21		
50			42		
73			66		
84			79		
92			88		
96			94		
99			98		
NINTH GRADE ➔			100		
eight	appear	nails	spend	which	tailor
afraid	liberty	needle	enjoy	length	thumb
uncle	enough	nobody	awful	destroy	tills
rather	fact	oar	usual	newspaper	trial
comfort	board	palace	complaint	daughter	twelve
elect	September	penny	auto	answer	voyage
aboard	station	pitcher	vacation	reply	whisper
jail	attend	regular	beautiful	oblige	wrong
shed	between	repeats	flight	sail	
retire	public	reprove	travel	cities	
refuse	friend	sailor	rapid	known	
district	during	sentence	repair	several	
restrain	through	shining	trouble	desire	
royal	police	surface	entrance	nearly	
objection	until	sweeping	importance	animal	
pleasure	madam	sweeps	carried	basin	
navy	truly	thief	loss	butcher	
fourth	whole	waist	fortune	button	
population	address	waiting	empire	cabbage	
proper	request	weary	mayor	careful	
judge	raise	writing	wait	caught	
weather	August		beg	changing	
worth	Tuesday		degree	cough	
contain	struck		prison	cousin	
figure	getting		engine	dollars	
sudden	don't		visit	freeze	
forty	Thursday		guest	friends	
instead	canoe		department	grief	
throw	captain		obtain	guilty	
personal	cellar		family	hopping	
everything	clothes		favor	hungry	
rate	covered		Mrs.	kitchen	
chief	creature		husband	language	
perfect	curtain		amount	lining	
second	declared		human	nephew	
slide	distance		view	nineteen	
farther	double		election	noticed	
duty	explain		clerk	parlor	
intend	fields		though	passengers	
company	floated		o'clock	queer	
quite	holiday		support	quiet	
none	lemon		does	remained	
knew	laughter		regard	retreating	
remain	lying		escape	style	
direct	mountains		since	subtract	

BUCKINGHAM EXTENSION OF THE AYRES SPELLING SCALE

	Q			R	
SECOND GRADE➔	16			12	
THIRD GRADE➔	34			27	
FOURTH GRADE➔	58			50	
FIFTH GRADE➔	73			66	
SIXTH GRADE➔	84			79	
SEVENTH GRADE➔	92			88	
EIGHTH GRADE➔	96			94	
NINTH GRADE➔	99			98	
	sometimes declare engage final terrible surprise period addition employ property select connection firm region convict private command debate crowd factory publish represent term section relative progress entire president measure famous serve estate remember either effort important due include running allow position field ledge	claim primary result Saturday appoint information whom arrest themselves special women present action justice gentlemen enclose await suppose wonderful direction forward although prompt attempt whose statement perhaps their imprison written arrange <i>ankle</i> <i>appears</i> <i>beggar</i> <i>bracelet</i> <i>breathe</i> <i>calm</i> <i>circus</i> <i>consented</i> <i>continued</i> <i>dangerous</i> <i>debt</i> <i>dried</i>	<i>exercise</i> <i>grammar</i> <i>Indian</i> <i>journey</i> <i>laid</i> <i>onion</i> <i>praise</i> <i>properly</i> <i>salary</i> <i>searched</i> <i>smooth</i> <i>thirteen</i> <i>touch</i> <i>towel</i> <i>umbrella</i> <i>veal</i> <i>weapon</i>	forenoon lose combination avenue neighbor weigh wear entertain salary visitor publication machine toward success drown adopt secure honor promise wreck prepare vessel busy prefer illustrate different object provision according already attention education director purpose common diamond together convention increase manner feature article service	injure effect distribute general tomorrow consider against complete search treasure popular Christmas interest <i>advice</i> <i>American</i> <i>bargain</i> <i>choose</i> <i>cocoa</i> <i>collar</i> <i>debts</i> <i>disaster</i> <i>enemy</i> <i>fierce</i> <i>janitor</i> <i>lawyer</i> <i>patient</i> <i>pear</i> <i>piano</i> <i>pickles</i> <i>prisoner</i> <i>release</i> <i>resign</i> <i>reveal</i> <i>sleeve</i> <i>soldier</i> <i>stopping</i> <i>sword</i> <i>tobacco</i> <i>tomato</i> <i>treason</i>

BUCKINGHAM EXTENSION OF THE AYRES SPELLING SCALE

S		T		U	
8		6		4	
21		16		12	
42		34		27	
58		50		42	
73		66		58	
84		79		73	
92		88		84	
96		94		92	
often stopped motion theater improvement century total mention arrive supply assist difference examination particular affair course neither local marriage further serious doubt condition government opinion believe system possible piece certain witness investigate therefore too pleasant anxious behavior canvas carriage ceiling celery certainly college	<i>comrade concert decided design dictionary difficult elephant fertile frightened gallows grocery handkerchief listened loose morsel nickel niece pistols purchased quarrel recess saucer sleigh society source speech steak telephone trolley whistle</i>	guess circular argument volume organize summon official victim estimate accident invitation accept impossible concern associate automobile various decide entitle political national recent business refer minute ought absence conference Wednesday really celebration folks aches amusement approval banana biscuits bruised burglar business changeable chimney choir	<i>commence complete deceive discoveries electricity error exceptions favorite genuine handful hymn investigation lilies liquor medal medicine ninety realize reign scenery severe slipped sneeze stationary stomach straight succeed telegram whistling wholesome wreath wrestle</i>	meant earliest whether distinguish consideration colonies assure relief occupy probably foreign expense responsible beginning application difficulty scene finally develop circumstance issue material suggest mere senate receive respectfully agreement unfortunate majority elaborate citizen necessary divide achieves acquire almanac ancient apiece approaches attorney bouquet calculation	<i>ceremony concealed delicious described disappear dropped elegant emperor excellent grateful heir hoarse icicle ignorance interfere musician neutral patience pigeons rehearse reverence saucy siege vegetable veil wretch</i>

BUCKINGHAM EXTENSION OF THE AYRES SPELLING SCALE

	V	W	X	Y	Z
SECOND GRADE→	2	1	0		
THIRD GRADE→	8	6	4	2	1
FOURTH GRADE→	21	16	12	8	6
FIFTH GRADE→	34	27	21	16	12
SIXTH GRADE→	50	42	34	27	21
SEVENTH GRADE→	66	58	50	42	34
EIGHTH GRADE→	79	73	66	58	50
NINTH GRADE→	88	84	79	73	66
	principal testimony discussion arrangement reference evidence experience session secretary association career height apparent artillery ascending campaign cereal coarse columns desirable extremely hominy imagine independent individual innocent leisure license magnificent mosquito mysterious occasion prairie relieve sacrifice scissors sense solemn tying valise volunteer welfare yacht	organization emergency appreciate sincerely athletic extreme practical proceed cordially character separate February antique bicycle calendar consequence disease fatigue foreigners grease isthmus nonsense resources science secrecy sensible vehicle vicinity	immediate convenient receipt preliminary disappoint especially annual committee architecture artificial associates beneficial colonel confectionery contagious development distillery employees exquisite familiar financier intelligent mistletoe opportunity peculiar persevere reproached rinsed treachery	decision principle accommodate accuracy counterfeit dessert digestible immense leopard marmalade millionaire mucilage orchestra parliament perceived possess precipice recommended resemblance restaurant seized superintendent surgeon thoroughly	judgment recommend allege acquaintance cemetery eliminate endeavor enthusiasm extraordinary millinery mortgage parallel physician porcelain recipe syllables tortoise

BUCKINGHAM EXTENSION OF THE AYRES SPELLING SCALE

AA	AB	AC	AD	AE	AF
4	2	1	0		
8	6	4	2	1	0
16	12	8	6	4	2
27	21	16	12	8	6
42	34	27	21	16	12
58	50	42	34	27	21
<i>apologize appropriate cauliflower chandelier discipline dispensary fatiguing immediately kerosene menagerie mischievous municipal persistence privilege stationery sufficiently vaguely</i>	<i>combustible guarantee incessant lieutenant occurrence pneumonia proficiency villain</i>	<i>abyss cantaloupe embarrassment poultice sovereign syndicate</i>	<i>appendicitis chauffeur hippopotamus maneuver miscellaneous penitentiary souvenir</i>	<i>hallelujahs inflammable rhinoceros</i>	<i>conscientious discernible dissension jardiniere naphtha rendezvous</i>

OTIS QUICK-SCORING MENTAL ABILITY TESTS

By ARTHUR S. OTIS, PH.D.

Formerly Development Specialist with Advisory Board, General Staff, United States War Department

Beta

A

BETA TEST: FORM A

IQ.....

For Grades 4-9

Score.....

Read this page. Do what it tells you to do.

Do not open this booklet, or turn it over, until you are told to do so.

Fill these blanks, giving your name, age, birthday, etc. Write plainly.

Name.....Age last birthdayyears
First name, initial, and last name

Birthday.....Teacher.....Date.....19.....
Month Day

Grade.....School.....City.....

This is a test to see how well you can think. It contains questions of different kinds. Here is a sample question already answered correctly. Notice how the question is answered:

Sample: Which one of the five things below is soft?

1 glass 2 stone 3 cotton 4 iron 5 ice.....
1 2 3 4 5

The right answer, of course, is *cotton*; so the word *cotton* is underlined. And the word *cotton* is No. 3; so a heavy cross has been put in the 3d circle. This is the way you are to answer the questions.

Try this sample question yourself. Do not write the answer; just draw a line under it and then put a heavy cross in the right circle.

Sample: A robin is a kind of —

1 plant 2 bird 3 worm 4 fish 5 flower.....
1 2 3 4 5

The answer is *bird*; so you should have drawn a line under the word *bird* and put a heavy cross in the 2d circle. Try this one:

Sample: Which one of the five numbers below is larger than 55?


1 53 2 48 3 29 4 57 5 16.....
1 2 3 4 5

The answer, of course, is 57; so you should have drawn a line under 57 and put a heavy cross in the 4th circle.

The test contains 80 questions. You are not expected to be able to answer all of them, but do the best you can. You will be allowed half an hour after the examiner tells you to begin. Try to get as many right as possible. Be careful not to go so fast that you make mistakes. Do not spend too much time on any one question. No questions about the test will be answered by the examiner after the test begins. Lay your pencil down.

Do not turn this booklet until you are told to begin.

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Fill these blanks, giving your name, age, birthday, etc. Write plainly.

Name..... Age last birthday years
First name, Initial, and last name

Birthday..... Teacher..... Date..... 19.....
Month Day

Grade..... School..... City.....

This is a test to see how well you can think. It contains questions of different kinds. Here is a sample question already answered correctly. Notice how the question is answered:

Sample: Which one of the five things below is soft?

1 glass 2 stone 3 cotton 4 iron 5 ice..... ☐ ☐ ☒ ☐ ☐

The right answer, of course, is cotton; so the word cotton is underlined. And the word cotton is No. 3; so a heavy cross has been put in the 3d circle. This is the way you are to answer the questions.

Try this sample question yourself. Do not write the answer; just draw a line under it and then put a heavy cross in the right circle.

Sample: A robin is a kind of —

1 plant 2 bird 3 worm 4 fish 5 flower..... ☐ ☒ ☐ ☐ ☐

The answer is bird; so you should have drawn a line under the word bird and put a heavy cross in the 2d circle. Try this one:

Sample: Which one of the five numbers below is larger than 55?

1 53 2 48 3 29 4 57 5 16..... ☐ ☒ ☐ ☐ ☐













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Do not turn this booklet until you are told to begin.

Examination begins here.

Page 1

- Which one of the five things below does not belong with the others?
1 potato 2 turnip 3 carrot 4 stone 5 onion.....
- Which one of the five answers below tells best what a sword is?
1 to cut 2 a weapon 3 an officer 4 a tool 5 to fight.....
- Which one of the five words below means the opposite of north?
1 east 2 star 3 south 4 pole 5 equator.....
- The peeling is to a banana and the husk is to an ear of corn the same as a shell is to what?
1 an apple 2 an egg 3 juice 4 a peach 5 a hen.....
- A child who knows he is guilty of doing wrong should feel —
1 bad 2 sick 3 better 4 afraid 5 ashamed.....
- Which one of the five things below is the largest?
1 knee 2 toe 3 leg 4 ankle 5 foot.....
- Which one of the five words means the opposite of strong?
1 man 2 weak 3 small 4 short 5 thin.....
- Three of the four designs at the right are alike. Which one is not like the other three?
1  2  3  4 
- Which one of the five things below is most like these three: a chair, a bed, and a stove?
1 a chimney 2 a stick 3 a window 4 a table 5 a floor.....
- A knee is to a leg as an elbow is to what?
1 an arm 2 a shoulder 3 a bone 4 a wrist 5 a hand.....
- Which word means the opposite of joy?
1 sickness 2 bad 3 happiness 4 sorrow 5 cry.....
- If I find a kind of plant that was never seen before, I have made —
1 an invention 2 an adoption 3 a creation 4 a novelty 5 a discovery.
- A sculptor is to a statue as an author is to a —
1 book 2 man 3 name 4 bookcase 5 pen.....
- At 3 cents each, how many pencils can be bought for 27 cents?
1 27 2 81 3 3 4 9 5 30.....
- Three of the four designs at the right are alike. Which one is not like the other three?
1  2  3  4 
- Which is the most important reason that words in the dictionary are arranged alphabetically?
1 It is the simplest arrangement. 2 It puts the shortest words first.
3 It enables us to find any word quickly. 4 It is a custom. 5 The printing is easier.
- Which one of the five things below is most like these three: a saw, a hammer, and a file?
1 a bottle 2 a pen 3 a screw driver 4 a fork 5 a carpenter.....
- If the following words were arranged in order, which word would be in the middle?
1 luncheon 2 dress 3 undress 4 supper 5 breakfast.....
- The saying, "Don't count your chickens before they are hatched," means —
1 Don't hurry. 2 Don't be too sure of the future. 3 Haste makes waste.
4 Don't gamble. 5 Don't raise chickens.....
- Three of the four designs at the right are alike. Which one is not like the other three?
1  2  3  4 
- A boy who often tells big stories about what he can do is said to —
1 lie 2 fake 3 cheat 4 joke 5 brag.....
- Which tells best just what a colt is?
1 an animal with hoofs 2 an awkward little beast 3 an animal that runs fast
4 a young horse 5 a little animal that eats hay.....

(Go right on to Page 2.)

Page 2

- Which of the five things below is most like these three: a horse, a pigeon, and a cricket?
1 a stall 2 a saddle 3 a feather 4 a goat 5 a wing
- Railroad tracks are to a locomotive as what is to an automobile?
1 tires 2 steam 3 speed 4 the road 5 gasoline
- Which word means the opposite of pretty?
1 good 2 ugly 3 bad 4 crooked 5 nice...
- Which one of the words below would come first in the dictionary?
1 tramp 2 saint 3 razor 4 quart 5 grass....
- An event which is sure to happen is said to be —
1 probable 2 possible 3 doubtful 4 certain 5 delayed
- One number is wrong in the following series. What should that number be? 7 1 7 2 7 3 7 4 7 5 7 6 7 8
1 7 2 6 3 8 4 4 5 5.....
- Which of these series contains a wrong number?
1 3-6-9-12-15 2 2-5-8-11-14 3 1-4-7-10-12
4 2-4-6-8-10 5 1-3-5-7-9.....
- Which one of the five things below is most like these three: a ship, a bicycle, and a truck?
1 a sail 2 a wheel 3 a train 4 the ocean 5 a tire
- Which statement tells best just what a hallway is?
1 a small room 2 a place to hang your hat and coat
3 it is long and narrow 4 where to say good-by
5 a passage leading from one room to another.....
- Steam is to water as water is to —
1 hot 2 ice 3 an engine 4 a solid 5 gas..
- Which one of these words would come last in the dictionary?
1 health 2 juggle 3 normal 4 never 5 grateful
- If George is taller than Frank and Frank is taller than James, then George is (?) James. 1 taller than
2 shorter than 3 just as tall as 4 (cannot say which)
- A man who betrays his country is called a —
1 thief 2 traitor 3 enemy 4 coward 5 slacker
- Count each 7 below that has a 5 next after it.
7 5 3 0 9 7 3 5 8 7 7 4 2 1 7 5 7 3 2 4 7 0 9 3 7 5 5 7 2 5 7 7 5 4 7 1
How many such 7's did you count?
1 11 2 2 3 3 4 4 5 12.....
- The daughter of my mother's brother is my —
1 sister 2 niece 3 cousin 4 aunt 5 granddaughter
- Peace is to war as (?) is to confusion.
1 explosion 2 order 3 armistice 4 riot 5 police
- If Paul is older than Herbert and Paul is younger than Robert, then Robert is (?) Herbert. 1 older than
2 younger than 3 just as old as 4 (cannot say which)
- If the following words were arranged in order, with what letter would the middle word begin?
Week Year Hour Second Day Month Minute
1 W 2 S 3 H 4 D 5 M.....

(Go right on to Page 3.)

59. If the words below were rearranged to make a good sentence, the third word of the sentence would begin with what letter? men high the a wall built stone
1 m 2 b 3 h 4 w 5 s.....
60. Three of the four designs at the right are alike. Which one is not like the other three?
61. There is a saying, "Any port in a storm." This means —
1 Ships should not venture out to sea in storms. 2 Stormy weather causes large waves in harbors.
3 In emergencies any aid is acceptable. 4 Ships usually sink in storms.
62. Which one of the five things below is most like these three: cannon ball, wire, and penny?
1 dollar bill 2 bone 3 string 4 pencil 5 key
63. Three of the four designs at the right are alike. Which one is not like the other three?
64. There is a saying, "Don't look a gift horse in the mouth." This means —
1 It is not safe to look into the mouth of a horse. 2 You cannot judge the age of a gift horse by his teeth.
3 Don't accept a horse as a gift. 4 Although you question the value of a gift, accept it graciously.
65. A boy is to a man as (?) is to a sheep.
1 wool 2 a lamb 3 a goat 4 a shepherd 5 a dog
66. If the following words were arranged to make a good sentence, with what letter would the last word of the sentence begin? usually are of made tables wood 1 w 2 d 3 a 4 t 5 m....
67. An agreement reached in which both sides yield somewhat in their demands is called —
1 a promise 2 a compromise 3 an understanding 4 a deadlock 5 an armistice.....
68. Three of the four designs at the right are alike. Which one is not like the other three?
69. What is the letter that follows the letter that comes next after M in the alphabet?
1 L 2 M 3 N 4 O 5 P
70. One number is wrong in the following series: 1 2 4 8 24 32 64 What should that number be?
1 6 2 12 3 3 4 16 5 48.....
71. If I have a large box with two small boxes in it and five very small boxes in each small box, how many boxes are there in all? 1 eight 2 seven 3 ten 4 twelve 5 thirteen
72. There is a saying, "An ounce of practice is worth a pound of preaching." This means —
1 Don't preach. 2 Deeds count more than words. 3 Preaching takes practice. 4 Don't practice.
73. If a photograph that is 2 inches wide and 3 inches long is enlarged to be 10 inches wide, how many inches long will it be? 1 11 2 12 3 15 4 20 5 30.....
74. One number is wrong in this series: 1 2 4 5 7 8 10 11 12 14 What should that number be?
1 9 2 6 3 3 4 13 5 16.....
75. When the time by a clock was 8 minutes past 10, the hands were interchanged. The clock then said about —
1 10 min. past 8 2 8 min. past 10 3 8 min. of 2 4 8 min. of 10 5 8 min. past 2
76. A car owner uses a mixture in his radiator containing 1 quart of alcohol to every 2 quarts of water. How many quarts of alcohol are needed for 15 quarts of the mixture? 1 $7\frac{1}{2}$ 2 $\frac{1}{2}$ 3 14 4 30 5 5
77. What letter in the following series appears a third time nearest the beginning?
A E C B A D D E C F B C D A E E B D 1 A 2 B 3 C 4 D 5 E
78. In a foreign language
pira numa bega means *very deep snow*; *pira seco* means *white snow*; *numa copa* means *very well*.
What word means deep? 1 pira 2 numa 3 bega 4 copa 5 seco
79. Which of the five words below does not belong with the others?
1 brave 2 clever 3 honest 4 generous 5 loyal
80. A boy is now three times as old as his sister. In 4 years he will be only twice as old. How many years old is his sister? 1 1 2 2 3 3 4 4 5 5.....

1 2 3 4 5
23 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
24 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
25 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
26 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
27 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
28 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
29 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
30 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
31 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
32 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
33 ☐ ☐ ☐ ☐ ☐

1 2 3 4
34 ☐ ☐ ☐ ☐

1 2 3 4 5
35 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
36 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
37 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
38 ☐ ☐ ☐ ☐ ☐

1 2 3 4
39 ☐ ☐ ☐ ☐

1 2 3 4 5
40 ☐ ☐ ☐ ☐ ☐

41. A quantity which grows larger is said to —
1 prosper 2 increase 3 fatten 4 rise 5 burst
42. A bicycle is to a motorcycle as a wagon is to what?
1 an engine 2 an automobile 3 a horse 4 slower
5 an airplane
43. Which of the five things below is most like these three: a tent, a flag, and a sail?
1 a shoe 2 a ship 3 a staff 4 a towel 5 a rope..
44. What is the most important reason that we use clocks?
1 To wake us up in the morning. 2 To help us catch trains.
3 To regulate our daily lives. 4 They are ornamental.
5 So that children will get to school on time.
45. If the following words were rearranged to make a good sentence, with what letter would the third word of the sentence begin? houses stone built of men wood and
1 h 2 s 3 b 4 m 5 w.....
46. Which of these expressions is the most definite?
1 soon 2 early 3 later 4 morning 5 ten A.M.
47. A vase is to flowers as (?) is to milk.
1 a cow 2 a pitcher 3 white 4 drink 5 cream
48. A lamp is to a light as (?) is to a breeze.
1 a fan 2 bright 3 a sailboat 4 a window 5 blow
49. If the following words were arranged in order, which word would be in the middle?
1 good 2 excellent 3 wretched 4 fair 5 poor
50. If Henry is taller than Tom and Henry is shorter than George, then George is (?) Tom. 1 taller than 2 shorter than
3 just as tall as 4 (cannot say which)
51. A king is to a kingdom as a president is to what? 1 queen
2 vice-president 3 senate 4 republic 5 democrat
52. John is the fifth child from each end of a row. How many pupils are there in a row?
53. Which tells best what an automobile is? 1 a thing with tires
2 something to travel in 3 an engine mounted on wheels
4 a horseless carriage 5 a vehicle propelled by an engine
54. Brick is to a wall as (?) is to a table.
1 a chair 2 red 3 eat 4 a kitchen 5 wood
55. A wire is to electricity as (?) is to gas.
1 a flame 2 a spark 3 hot 4 a pipe 5 a stove
56. An object or institution that is designed to last only a short time is said to be — 1 temporary 2 changeable
3 unsound 4 worthless 5 unstable
57. Which word means the opposite of humility?
1 joy 2 pride 3 dry 4 funny 5 recklessness
58. A word that means suitable, fit, or proper is —
1 grotesque 2 odd 3 inadequate 4 superfluous
5 appropriate

1 2 3 4 5
1 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
2 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
3 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
4 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
5 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
6 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
7 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
8 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
9 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
10 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
11 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
12 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
13 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
14 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
15 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
16 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
17 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
18 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
19 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
20 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
21 ☐ ☐ ☐ ☐ ☐

1 2 3 4 5
22 ☐ ☐ ☐ ☐ ☐

100 WORD SPELLING TEST SELECTED FROM COLUMN O

BUCKINGHAM EXTENSION OF THE AYRES SPELLING SCALE

- | | | |
|----------------|---------------|---------------|
| 1. eight | 36. slide | 71. Thursday |
| 2. afraid | 37. farther | 72. canoe |
| 3. uncle | 38. duty | 73. captain |
| 4. rather | 39. intend | 74. cellar |
| 5. comfort | 40. company | 75. clothes |
| 6. elect | 41. quite | 76. covered |
| 7. aboard | 42. none | 77. creature |
| 8. jail | 43. knew | 78. curtain |
| 9. shed | 44. remain | 79. declared |
| 10. retire | 45. direct | 80. distance |
| 11. refuse | 46. appear | 81. double |
| 12. district | 47. liberty | 82. explain |
| 13. restrain | 48. enough | 83. fields |
| 14. royal | 49. fact | 84. floated |
| 15. objection | 50. board | 85. holiday |
| 16. pleasure | 51. September | 86. lemon |
| 17. navy | 52. station | 87. laughter |
| 18. fourth | 53. attend | 88. lying |
| 19. population | 54. between | 89. mountains |
| 20. proper | 55. public | 90. nails |
| 21. judge | 56. friend | 91. needle |
| 22. weather | 57. during | 92. nobody |
| 23. worth | 58. through | 93. oar |
| 24. contain | 59. police | 94. palace |
| 25. figure | 60. until | 95. penny |
| 26. sudden | 61. madam | 96. pitcher |
| 27. forty | 62. truly | 97. regular |
| 28. instead | 63. whole | 98. repeats |
| 29. throw | 64. address | 99. reprove |
| 30. personal | 65. request | 100. raise |
| 31. everything | 66. August | |
| 32. rate | 67. Tuesday | |
| 33. chief | 68. struck | |
| 34. perfect | 69. getting | |
| 35. second | 70. don't | |

100 WORD SPELLING TEST SELECTED FROM COLUMN Q

BUCKINGHAM EXTENSION OF THE AYRES SPELLING SCALE

- | | | |
|----------------|-----------------|---------------|
| 1. sometimes | 36. due | 71. imprison |
| 2. declare | 37. include | 72. written |
| 3. engage | 38. running | 73. arrange |
| 4. final | 39. allow | 74. ankle |
| 5. terrible | 40. position | 75. appears |
| 6. surprise | 41. field | 76. beggar |
| 7. period | 42. ledge | 77. bracelet |
| 8. addition | 43. claim | 78. breathe |
| 9. employ | 44. primary | 79. calm |
| 10. property | 45. result | 80. circus |
| 11. selection | 46. Saturday | 81. consented |
| 12. connection | 47. appoint | 82. continued |
| 13. firm | 48. information | 83. dangerous |
| 14. region | 49. whom | 84. debt |
| 15. convict | 50. arrest | 85. dried |
| 16. private | 51. themselves | 86. exercise |
| 17. command | 52. special | 87. grammar |
| 18. debate | 53. women | 88. Indian |
| 19. crowd | 54. present | 89. journey |
| 20. factory | 55. action | 90. laid |
| 21. publish | 56. justice | 91. onion |
| 22. represent | 57. gentlemen | 92. praise |
| 23. term | 58. enclose | 93. properly |
| 24. section | 59. await | 94. salary |
| 25. relative | 60. suppose | 95. searched |
| 26. progress | 61. wonderful | 96. smooth |
| 27. entire | 62. direction | 97. thirteen |
| 28. president | 63. forward | 98. touch |
| 29. measure | 64. although | 99. towel |
| 30. famous | 65. prompt | 100. effort |
| 31. serve | 66. attempt | |
| 32. estate | 67. whose | |
| 33. remember | 68. statement | |
| 34. either | 69. perhaps | |
| 35. important | 70. their | |

DIRECTIONS FOR PARAGRAPH WRITTEN
AT THE BEGINNING OF THE EXPERIMENT

(Test given in a separate period following I.Q. and spelling lists)

Boys and girls, I am pleased that we have the opportunity of working together again for a short period of time. This time we will do something a little different. This will be very interesting for me so I hope it will be just as interesting for you.

First of all, would you take the sheet of foolscap that is on your desk and write your first and last names in the upper right hand corner. On the next line below your name put your grade. On the next line write the name of your school.

Now lay down your pencils while we spend a few minutes talking about a very interesting topic.

Do you like to have spare time or extra time in which you can do as you please? This is called your leisure time. What are some of the things you do in your leisure time or spare time at home? (Get replies from the children.)

Occasionally we have leisure time at school. Just what would you do if your teacher said, "Class, you may have the next hour to do as you please." (Responses.)

Boys and girls, there are so many things that I would like to hear about from you that I just cannot hear each one of you, so I would like you to write a paragraph called "My Favorite Leisure Time Activity." Do not copy the title. Just pretend you are talking to me to tell me about your favorite leisure time activity. Tell about more than one if you wish.

If you have any trouble with spelling just do the best you can. Write down what you think the word should be or write the first letter of the word. You are not allowed to get help from me or from your dictionary. Try your best to give me your ideas.

Are there any questions? (Allow approximately five questions.)

Now I would like you to begin writing about "My Favorite Leisure Time Activity." You may write for twenty minutes. Begin. (Move about among the pupils as they are working. At the end of twenty minutes allow the students to finish the sentences which they are writing and collect papers.)

NOTE:

Follow similar instructions for the paragraph written at the end of the experiment. Discussion should centre around the topic "If I Had A Wish."

APPENDIX B

MATERIALS USED IN THIS STUDY

LIST A: 350 MOST USEFUL SPELLING WORDS¹

a	buy	father	heard
about	by	feet	help
across	call	fifth	her
after	came	find	here
afternoon	can	fine	high
again	candy	fire	him
all	car	first	his
along	children	fish	home
always	Christmas	five	hope
am	class	flowers	horse
an	clean	food	horses
and	clothes	for	house
another	cold	found	how
any	come	four	hurt
are	comes	friend	I
arithmetic	coming	friends	ice
around	corn	from	if
as	could	front	I'm
at	couldn't	funny	in
aunt	country	game	interesting
away	cousin	games	into
baby	daddy	gave	is
back	day	get	it
bad	days	getting	just
ball	dear	girl	keep
be	did	girls	kind
because	didn't	give	know
bed	dinner	glad	last
been	do	go	left
before	does	goes	let
best	dog	going	letter
better	doll	good	like
big	done	got	liked
black	don't	grade	little
blue	door	ground	live
books	down	had	long
both	dress	hair	look
box	each	hand	lot
boy	eat	happy	lots
boys	eggs	hard	love
bring	end	has	made
brother	enjoyed	have	making
brought	every	he	man
but	far	head	many

¹Fitzgerald, op.cit., p.p. 15-17.

LIST A (Cont'd.)

may	rain	that	which
me	read	the	while
men	reading	their	white
might	red	them	who
milk	remember	then	why
miss	ride	there	will
money	right	these	winter
more	room	they	wish
morning	run	thing	with
most	said	things	won't
mother	Santa Claus	think	work
much	saw	third	would
my	say	this	write
name	school	three	writing
near	second	through	written
never	see	time	year
new	seen	to	years
next	set	today	yes
nice	she	together	yesterday
night	shoes	told	yet
no	should	too	you
not	show	took	your
now	sister	town	
o'clock	six	tree	
of	small	trees	
off	snow	two	
oh	so	under	
old	some	until	
on	something	up	
once	sometimes	upon	
one	soon	us	
or	spelling	use	
other	spring	used	
our	started	very	
out	stay	visit	
over	stayed	walk	
pair	store	want	
paper	story	wanted	
party	street	wants	
people	summer	was	
picture	Sunday	wash	
pictures	supper	water	
place	sure	way	
play	table	we	
played	take	well	
playing	teacher	went	
please	teacher's	were	
pretty	tell	what	
program	ten	when	
put	thank	where	

LIST B: 450 VERY USEFUL SPELLING WORDS²

afraid	broke	dance	Feb.
age	brothers	dark	February
ago	brown	Dec.	feed
air	build	December	feeling
airplane	building	decided	fell
all right	built	deep	few
almost	busy	desk	field
alone	cake	died	fight
already	called	different	finished
also	cannot	dirt	fishing
animals	can't	dishes	flag
answer	card	doctor	flew
anything	care	doesn't	floor
apple	carry	dogs	flower
apples	cars	doing	fly
April	cat	dollars	folks
ask	catch	draw	foot
asked	caught	dresses	football
assembly	cave	drink	forest
ate	cents	dry	forget
awful	chair	during	forgot
awhile	chicken	early	fourth
babies	child	Easter	Friday
bank	church	eating	fruit
barn	city	egg	full
basket	clay	eight	fun
bath	close	else	garden
beautiful	coal	enjoy	geography
began	coat	enough	gets
behind	color	even	gives
being	colors	evening	glass
bet	company	ever	gone
bicycle	cook	everybody	grades
bird	corner	everyone	grandma
birds	cotton	everything	grandmother
birthday	course	eyes	grass
bit	cousins	face	great
board	cow	fair	green
boat	cows	fall	grow
body	cross	family	guess
bottom	cut	farm	gun
bread	cute	fast	half
breakfast	dad	fat	Halloween

²Fitzgerald, op.cit., p.p. 18-21.

LIST B: (Cont'd.)

handkerchiefs	learn	nuts	round
hands	learned	ocean	rubber
hardly	leave	Oct.	running
hat	leaves	often	same
haven't	lessons	ones	sand
having	letters	only	sat
hay	light	open	Saturday
hear	likes	orange	says
helped	lines	oranges	sea
hill	lived	outside	seat
hit	lives	own	sell
hold	living	paint	send
hole	looked	papa	sent
hospital	looking	park	seven
hot	looks	part	several
houses	lost	pass	shall
hundred	lovely	pen	shoot
hunt	lunch	pencil	short
hunting	mad	pet	sick
hurry	mail	piano	side
ice cream	makes	pick	silk
I'll	mamma	picnic	since
important	March	pie	sing
inches	maybe	piece	sisters
Indian	mean	places	sit
ink	meat	plant	sitting
inside	meet	plays	skates
instead	merry	pony	skating
iron	middle	poor	sled
isn't	mine	present	sleep
it's	minutes	presents	snowing
its	Miss	P.S.	soap
I've	month	pull	someone
Jan.	mountains	quite	sometime
jump	mouth	rabbit	song
kept	move	rabbits	sorry
kill	moved	radio	south
killed	Mr.	raining	spend
kinds	Mrs.	ran	stand
knew	mud	ready	stars
knife	music	real	state
lady	must	received	stick
lake	myself	recess	sticks
land	named	rest	still
language	nearly	riding	stockings
large	news	ring	stop
largest	nine	river	stopped
late	north	road	stories
later	nothing	rode	stove
laugh	Nov.	roll	straight
lay	number	rope	string

LIST B: (Cont'd.)

strong	wear
study	weather
studying	week
such	weeks
suit	wet
sun	wild
suppose	wind
surprised	window
sweet	windows
swim	without
swimming	women
takes	won
talk	wood
tall	woods
teach	word
teachers	words
teeth	working
tells	world
test	wouldn't
than	wrote
thanksgiving	yard
that's	yellow
those	yours
thought	
throw	
till	
times	
tired	
tomorrow	
tonight	
top	
toy	
train	
tried	
trip	
truck	
truly	
try	
trying	
turn	
twenty	
uncle	
vacation	
valentine	
valentines	
wagon	
warm	
wasn't	
watch	

CANADIAN SPELLING DEMONS LIST³

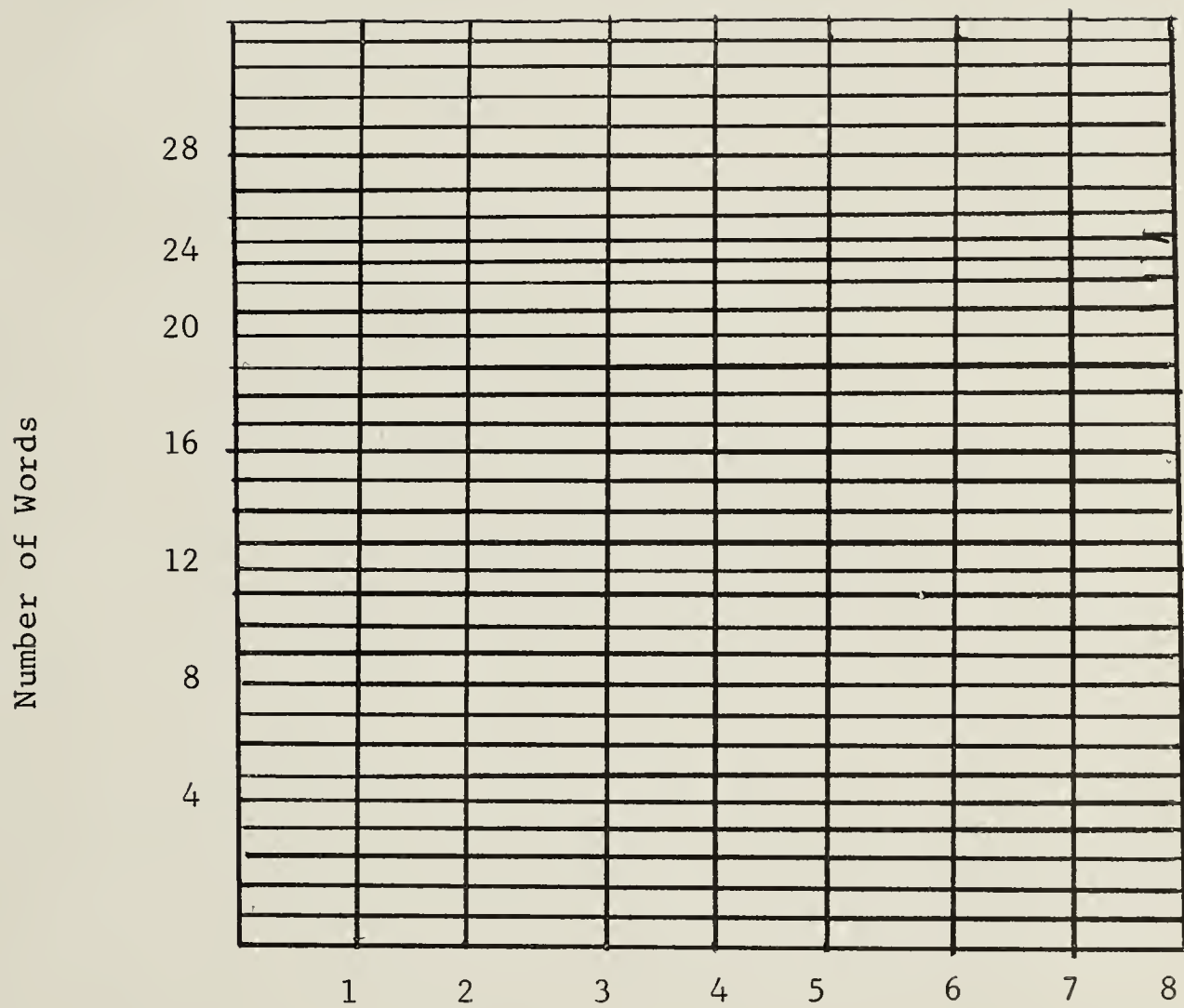
about	chased	from	laid
after	children	fun	laugh
again	circus	game	let's
along	climb	getting	likes
always	clothes	ghost	little
am	colour	girl	lots
an	coming	goes	made
and	could	going	magic
animals	couldn't	goodbye	married
another	course	got	me
are	cousin	guess	might
around	decided	half	minute
at	didn't	happened	missed
aunt	does	happily	money
baby	doesn't	have	month
back	dog	heard	morning
ball	dollars	her	mother
beautiful	don't	herd	motor
because	down	here	mountain
been	enemies	him	much
before	enough	his	my
believe	ever	hockey	name
bicycles	every	holiday	neighbor
biggest	except	horse	next
black	excite	hospital	nice
boys	fairy	house	no
break	family	I'm	now
breakfast	farm	in	o'clock
broke	father	interesting	of
brother	favorite	it	off
brought	field	its	on
build	fight	it's	once
but	finally	jump	one
buy	finished	jumped	only
by	first	just	other
came	follow	knew	our
catch	for	knock	over
caught	friend	know	own

³Fitzpatrick, op.cit., p.p. 69-80.

Canadian Demons (Cont'd.)

party	then	will
people	there	with
picnic	they're	whole
picture	things	would
piece	think	write
planets	thought	you
play	through	your
plays	tired	you're
porridge	to	yours
present	toboggan	
pretty	told	
quiet	too	
quite	took	
remember	train	
rifle	treasure	
said	tricks	
scared	tried	
saw	truly	
scientist	two	
second	uncle	
sincerely	until	
skating	upon	
sleep	usually	
some	valentine	
something	very	
sometimes	want	
started	was	
station	watch	
stopped	we	
studying	wear	
suddenly	went	
summer	were	
suppose	we're	
surprise	when	
swimming	where	
take	which	
taking	while	
than	white	
that's	who	
their	whose	
them	wiener	

Individual Progress Chart



Number of Words Selected (blue)

Number of Words Written Correctly (red)

B29838